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PRC

PRELIMINARY ASSESSMENT/ VISUAL SITE INSPECTION

MOTOROLA, INC.
SCHAUMBURG, ILLINOIS
ILD 079 763 140

FINAL REPORT

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, DC 20460

Work Assignment No.	:	R05032
EPA Region	:	5
Site No.	:	ILD 079 763 140
Date Prepared	:	October 23, 1992
Contract No.	:	68-W9-0006
PRC No.	:	309-R05032IL44
Prepared by	:	Resource Applications, Inc. (John Wong)
Contractor Project Manager	:	Shin Ahn
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EPA Work Assignment Manager	:	Kevin Pierard
Telephone No.	:	(312) 886-4448

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EXECUTIVE SUMMARY

Resource Applications, Inc. (RAI) performed a preliminary assessment and visual site inspection (PA/VSI) to identify and assess the existence and likelihood of releases from solid waste management units (SWMU) and other areas of concern (AOC) at the Motorola, Inc. (Motorola) facility in Schaumburg, Cook County, Illinois. This summary highlights the results of the PA/VSI and the potential for releases of hazardous wastes or hazardous constituents from SWMUs and AOCs identified.

The Motorola facility manufactures two-way radio communications equipment and accessories. In its Components Division, quartz crystals are cut and sized, polished, cleaned, and milled prior to mounting. Plating operations also occur within this division. In its Shared Systems Division, soldering of circuit modules (chip placement) and light assembly of base radio stations takes place. The facility generates the following waste streams: spent 1,1,1-trichloroethane (TCA)(F001); spent methanol (F003); waste methanol-contaminated rags (F003); waste terpene (D001); waste D-limonene (D001); waste kerosene sludge (D001); waste kerosene sludge contaminated with Freon (F001); waste ethylene glycol (D001); waste flammable liquid solvent mixture containing isopropanol (D001), acetone (F003), toluene (F005); waste soldering dross (D008); waste flammable/non-flammable aerosol cans (D001); waste nitric acid (D002); waste hydrochloric acid (D002); waste aqua regia (D002); waste chromic acid (D002); rinsewaters/waste plating solutions (D002); wastewater treatment sludge (F006); waste oil (D001); contaminated ground water possibly containing spent TCA (F001), acetone (F003), toluene (F005), and methylene chloride (F001); waste N-methyl pyrole (D002); medical wastes; waste flux thinner/ink solvents (D001); waste PCBs; and nonhazardous grit. In the past, the facility generated spent Freon (F001) and spent methylene chloride (F001) from degreasing operations. However, these materials are no longer used by the company.

The facility has operated at its current location since 1967. The facility occupies 325 acres in a mixed commercial and residential area and employs 9,500 people (5,200 in production). Motorola's current regulatory status is that of a large-quantity generator of hazardous waste. Previously, in 1980, Motorola filed its RCRA Part A permit application and listed its status as a generator, transporter, and treatment, storage, or disposal facility (TSD). Later in 1980, it requested status as a TSD only. On the permit application, Motorola listed two units for storing hazardous wastes: a

container storage area (S01) referring to SWMU 8, and an underground storage tank (S02) referring to SWMU 9. Motorola has been the sole owner and operator of the facility since its inception in 1967. Prior to that time, the area where the facility is located was agricultural land.

In February 1987, Motorola officially RCRA closed its Former Waste Solvent Underground Storage Tank (SWMU 9) used for storing waste flammable, chlorinated solvents. In July 1988, the facility's Former Container Storage Area (SWMU 8) was RCRA closed. These closure activities resulted in withdrawal of Motorola's RCRA Part A permit application. Consequently, the facility became subject to standards applicable to large-quantity generators which store hazardous waste for less than 90 days.

The PA/VSI identified the following 10 SWMUs at the Motorola facility:

Solid Waste Management Units

1. Satellite Accumulation Areas
2. Hazardous Waste Storage Area
3. Grit Cone Accumulation Area
4. PCB Accumulation Area
5. Solid Waste Drum Storage Area
6. Wastewater Treatment System
7. Ground Water Remediation Unit
8. Former Container Storage Area
9. Former Waste Solvent Underground Storage Tank (UST)
10. Former "Oil House" Sump

No Areas of Concern were discovered during the PA/VSI

Potential for release to ground water, surface water, air, and on-site soils from SWMUs 1 through 8 is low. SWMUs 1 through 5 manage waste in secured containers which are stored indoors on 6-inch-thick epoxy-coated concrete. There are no existing floor drains at the facility. Waste is stored for less than 90 days and is then picked up by various transporters for off-site disposal. The Wastewater Treatment System (SWMU 6) and Ground Water Remediation Unit (SWMU 7) manage wastewater enclosed in fiberglass and steel tanks and are both underlain by 6-inch-thick epoxy-coated concrete. The Former Container Storage Area (SWMU 8) for hazardous wastes was RCRA closed in 1988. There were no documented releases from this unit. The area is now used for raw materials

storage. These raw materials are stored in secure containers on 6-inch-thick epoxy-coated concrete and no floor drains exist. The past potential for release to ground water, surface water, air, and on-site soils from SWMUs 1 through 8 was low for the same reasons given above.

The Former Waste Solvent UST (SWMU 9) was removed in December 1985. The past potential for release to ground water, surface water, and air from this unit was low. A release to on-site soils from this unit occurred during its removal on December 20, 1985. Subsequent sampling and analyses of soil samples for organic compounds and solvents held by the unit revealed concentrations well below U.S. Environmental Protection Agency (EPA) maximum contaminant levels. The backfill (soil) was disposed of at an unspecified nonhazardous solid waste landfill and the excavated area (due to the removal of the tank) was filled and repaved. Illinois Environmental Protection Agency (IEPA) approved RCRA closure of the unit in February 1987. Current potential for release to ground water, surface water, air, and on-site soils is low as the unit no longer exists.

The past potential for release to ground water, surface water and air from the Former "Oil House" Sump (SWMU 10) was low. Prior to the removal/destruction of SWMU 10 in 1988, there was a release of spent TCA (F001), acetone (F003), toluene (F005), and methylene chloride (F001) to on-site soils. A Ground Water Remediation Unit (SWMU 7) was installed and ensuing analyses of ground water samples showed concentrations of spent TCA (F001), acetone (F003), toluene (F005), and methylene chloride (F001) to be well below EPA drinking water standards. As part of a remediation project with IEPA, soil vapor extractions are to be performed. Current potential for release to ground water, surface water, air and on-site soils is low due to the removal/destruction of the unit.

The Motorola facility is situated in a mixed residential and commercial area of Schaumburg, Cook County, Illinois. Schaumburg's population is approximately 70,000. The facility is bordered on its north and east sides by residential and commercial areas, on the west by a wetland and commercial area, and on the south by the Illinois Northwest Tollway (I-90). In close proximity (within 2 miles) to the facility are various sized wetlands. The different types of wetlands in the facility's surroundings include palustrine, emergent, seasonally-flooded wetlands as well as palustrine, emergent, seasonally flooded, partially drained wetlands. Two wetlands that are palustrine, open-water, permanently flooded, and excavated are located on site. The nearest school to the Motorola

facility is Plum Grove Junior High School, located about 1 mile northeast of the facility. The Ned Brown Forest Preserve is located 2 to 3 miles southeast of the Motorola facility.

The Motorola facility, as well as the City of Schaumburg, receives its water supply from Lake Michigan. The closest drinking water well is located approximately 1 mile northeast of the facility.

RAI recommends following up on the soil vapor extraction phase of the voluntary cleanup project of SWMU 10. RAI recommends no further action for the remaining identified SWMUs.

1.0 INTRODUCTION

PRC Environmental Management, Inc. (PRC), received Work Assignment No. R05032 from the U.S. Environmental Protection Agency (EPA) under Contract No. 68-W9-0006 (TES 9) to conduct preliminary assessments (PA) and visual site inspections (VSI) of hazardous waste treatment and storage facilities in Region 5. Resource Applications, Inc. (RAI), TES 9 team member, provided the necessary assistance to complete the PA/VSI activities for the Motorola, Inc. (Motorola) facility in Schaumburg, Illinois.

As part of the EPA Region 5 Environmental Priorities Initiative, the RCRA and CERCLA programs are working together to identify and address RCRA facilities that have a high priority for corrective action using applicable RCRA and CERCLA authorities. The PA/VSI is the first step in the process of prioritizing facilities for corrective action. Through the PA/VSI process, enough information is obtained to characterize a facility's actual or potential releases to the environment from solid waste management units (SWMU) and areas of concern (AOC).

A SWMU is defined as any discernible unit at a RCRA facility in which solid wastes have been placed and from which hazardous constituents might migrate, regardless of whether the unit was intended to manage solid or hazardous waste.

The SWMU definition includes the following:

- RCRA-regulated units, such as container storage areas, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, and underground injection wells
- Closed and abandoned units
- Recycling units, wastewater treatment units, and other units that EPA has usually exempted from standards applicable to hazardous waste management units
- Areas contaminated by routine and systematic releases of wastes or hazardous constituents. Such areas might include a wood preservative drippage area, a loading or unloading area, or an area where solvent used to wash large parts has continually dripped onto soils.

An AOC is defined as any area where a release to the environment of hazardous waste or constituents has occurred or is suspected to have occurred on a nonroutine and nonsystematic basis. This includes any area where a strong possibility exists that such a release might occur in the future.

The purpose of the PA is as follows:

- Identify SWMUs and AOCs at the facility
- Obtain information on the operational history of the facility
- Obtain information on releases from any units at the facility
- Identify data gaps and other informational needs to be filled during the VSI

The PA generally includes review of all relevant documents and files located at state offices and at the EPA Region 5 office in Chicago.

The purpose of the VSI is as follows:

- Identify SWMUs and AOCs not discovered during the PA
- Identify releases not discovered during the PA
- Provide a specific description of the environmental setting
- Provide information on release pathways and the potential for releases to each medium
- Confirm information obtained during the PA regarding operations, SWMUs, AOCs, and releases

The VSI includes interviewing appropriate facility staff; inspecting the entire facility to identify all SWMUs and AOCs; photographing all visible SWMUs; identifying evidence of releases; making a preliminary selection of potential sampling parameters and locations, if needed; and obtaining additional information necessary to complete the PA/VSI report.

This report documents the results of a PA/VSI of the Motorola, Inc. (Motorola) facility (EPA Identification No. 079 763 140) in Schaumburg, Cook County, Illinois. The PA was completed on August 3, 1992. RAI gathered and reviewed information from the Illinois Environmental Protection Agency (IEPA) and from EPA Region 5 RCRA files. RAI also reviewed relevant publications from the United States Department of Agriculture (USDA), U.S. Department of Commerce (USDC), U.S. Geological Survey (USGS), U.S. Department of the Interior (USDI), the Federal Emergency Management Agency (FEMA), and the National Oceanic and Atmospheric Administration (NOAA). The VSI was conducted on August 4, 1992. It included interviews with facility representatives and a walk-through inspection of the facility. RAI identified 10 SWMUs and no AOCs at the facility.

The VSI is summarized and 12 inspection photographs are included in Attachment A. Field notes from the VSI are included in Attachment B.

2.0 FACILITY DESCRIPTION

This section describes the facility's location; past and present operations; waste generating processes and waste management practices; a history of documented releases; regulatory history; environmental setting; and receptors.

2.1 FACILITY LOCATION

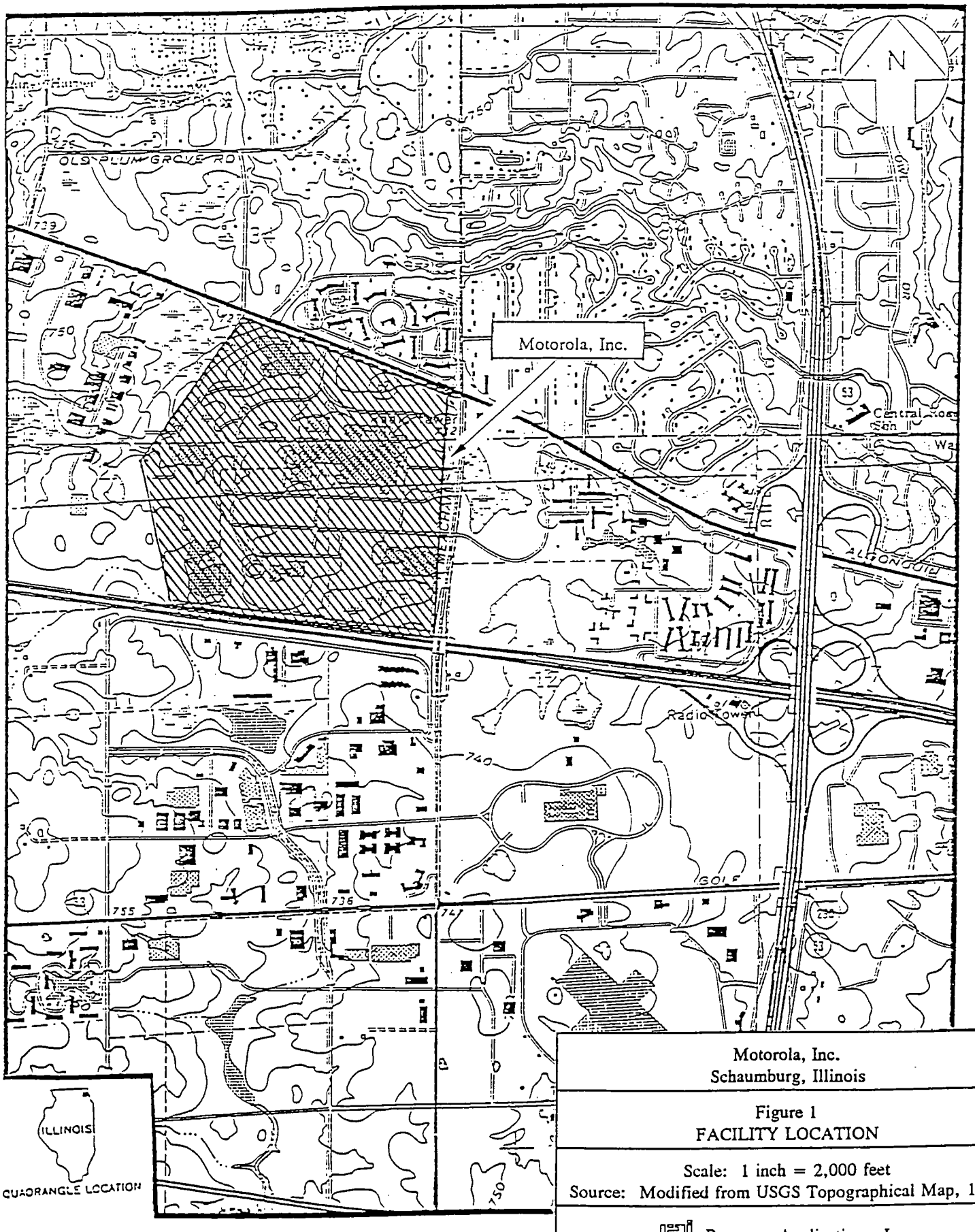
The Motorola facility is located at 1301 East Algonquin Road in Schaumburg, Cook County, Illinois. Figure 1 shows the location of the facility in relation to the surrounding topographic features (latitude 42°3′59″ N and longitude 88°2′56″ W). The facility occupies 325 acres in a commercial and residential mixed-use area.

The Motorola facility is bordered on the north by a residential and commercial area, on the west by a wetland and commercial area, on the south by the Illinois Northwest Tollway (I-90), and on the east by a residential and commercial area.

2.2 FACILITY OPERATIONS

Operations at Motorola's Schaumburg facility involve the manufacture of two-way radio equipment and associated accessories. More specifically, Motorola assembles base radio stations, microcircuits, quartz crystals, and electronic components. Operations are performed within two divisions of Motorola's Land Mobile Products Sector: Shared Systems and Components. Processes carried out in the Shared Systems Division are the soldering of circuit modules (chip placement) and light assembly of base radio stations. Within the Components Division, operations include the preparation of ceramic circuits and the manufacturing of quartz crystals and components by cutting, milling, polishing, cleaning, and electroplating. Solid wastes generated from Motorola's various operations and the SWMUs where they are managed are discussed in detail in Section 2.3.

Raw materials used at Motorola include corrosive chemicals, flammable solvents, and diesel fuel. Corrosive chemicals such as hydrochloric acid, nitric acid, and aqua regia (a mixture of hydrochloric acid and nitric acid) are used for purposes of dissolving metal and neutralizing the



Motorola, Inc. Schaumburg, Illinois
Figure 1 FACILITY LOCATION
Scale: 1 inch = 2,000 feet Source: Modified from USGS Topographical Map, 1980
Resource Applications, Inc.

contents within the on-site Wastewater Treatment System (SWMU 6). Flammable solvents, such as 1,1,1-trichloroethane (TCA) and methanol, are used for various cleaning and degreasing purposes. Both types of chemicals (flammable, corrosive) are employed in Motorola's general laboratory and research operations as well. These chemicals are stored in an area which was the Former Container Storage Area (SWMU 8). Prior to storage, the chemicals are properly segregated. Diesel fuel is used for operating Motorola's landscape equipment, and is stored in four underground storage tanks (USTs), two of which are located at the southeast corner of the facility's "1305" Building and two that are situated on the southeast corner of the Motorola's Management Information Systems (MIS) Building.

Motorola has an on-site Wastewater Treatment System (SWMU 6) that consists of a flow-through system and a batch system. Two types of reduction occur within the treatment system: chromium and cyanide (from plating operations). Rinsewaters then enter the flowthrough system and concentrated material goes to the batch system for treatment. All acids used by Motorola are managed in SWMU 6 except for those which are lab packed and sent off site for disposal.

The company also has an active Ground Water Remediation Unit (SWMU 7) which was installed to contain and treat contamination caused by a past release of spent TCA (F001), acetone (F003), toluene (F005), and methylene chloride (F001). The Ground Water Remediation Unit (SWMU 7) was installed in January 1989.

Motorola had a 2,000-gallon diesel fuel UST removed in December 1989. The reason for its removal, according to facility representatives in an April 24, 1990 letter to IEPA, was that the facility no longer needed it. Details regarding this UST are discussed more completely in Sections 2.4 and 2.5.

Solid wastes generated from facility operations and the SWMUs where they are managed are discussed in detail in Section 2.3.

Motorola has operated at the Schaumburg facility since 1967 and employs approximately 9,500 people. Of the total number of employees, about 5,200 are involved with production operations in the Land Mobile Products Sector.

The entire Motorola facility covers 325 acres with approximately 1.45 million square feet of building space and 225,000 square feet of area designated for production. The layout of the facility is such that the Land Mobile Products Sector, where manufacturing processes occur, is at the center of the facility (campus). Four parking lots (dimensions unknown) surround the Land Mobile Products Sector except on the north side, where one of Motorola's two stormwater retention ponds lies. Other buildings which comprise the Schaumburg facility are situated northwest, west, south, southwest and southeast of the Land Mobile Products Sector. These buildings include: the Management Information Systems (MIS) Building (west); Corporate Offices (south); the visitors' center (northwest); and a warehouse which provides spare parts for Motorola's products (southeast). Motorola's other stormwater retention pond lies to the southwest of the facility's center.

Prior to 1967, when Motorola began its operations in Schaumburg, the land on which the facility is located was used for agricultural purposes. Since 1967, Motorola has been the sole owner and operator of the facility.

2.3 WASTE GENERATION AND MANAGEMENT

Wastes are generated and managed at various locations at the facility. SWMUs and their current status are identified in Table 1. The locations of SWMUs in relation to the facility layout are shown in Figure 2. Wastes generated at the facility are summarized in Table 2. Facility generation and management of both hazardous and nonhazardous wastes are discussed below.

The primary waste streams generated at the Motorola facility are spent TCA (F001); spent methanol (F003); waste methanol-contaminated rags (F003); waste combustible liquids such as terpene (D001) and D-limonene (D001); waste kerosene sludge (D001) and waste kerosene sludge contaminated with Freon (F001); waste ethylene glycol (D001); waste flammable liquid solvent mixture of isopropanol (D001), acetone (F003), and toluene (F005); waste soldering dross (D008); waste flammable and non-flammable aerosol cans (D001); corrosive wastes such as waste hydrochloric acid (D002), waste nitric acid (D002), and waste aqua regia (D002); waste chromic acid (D002, D007); rinsewaters and waste plating solutions (D002); wastewater treatment sludge (F006); waste oil (D001); contaminated ground water possibly containing spent TCA (F001), acetone (F003), toluene (F005), and methylene chloride (F001); waste N-methyl pyrole (D002); waste flux

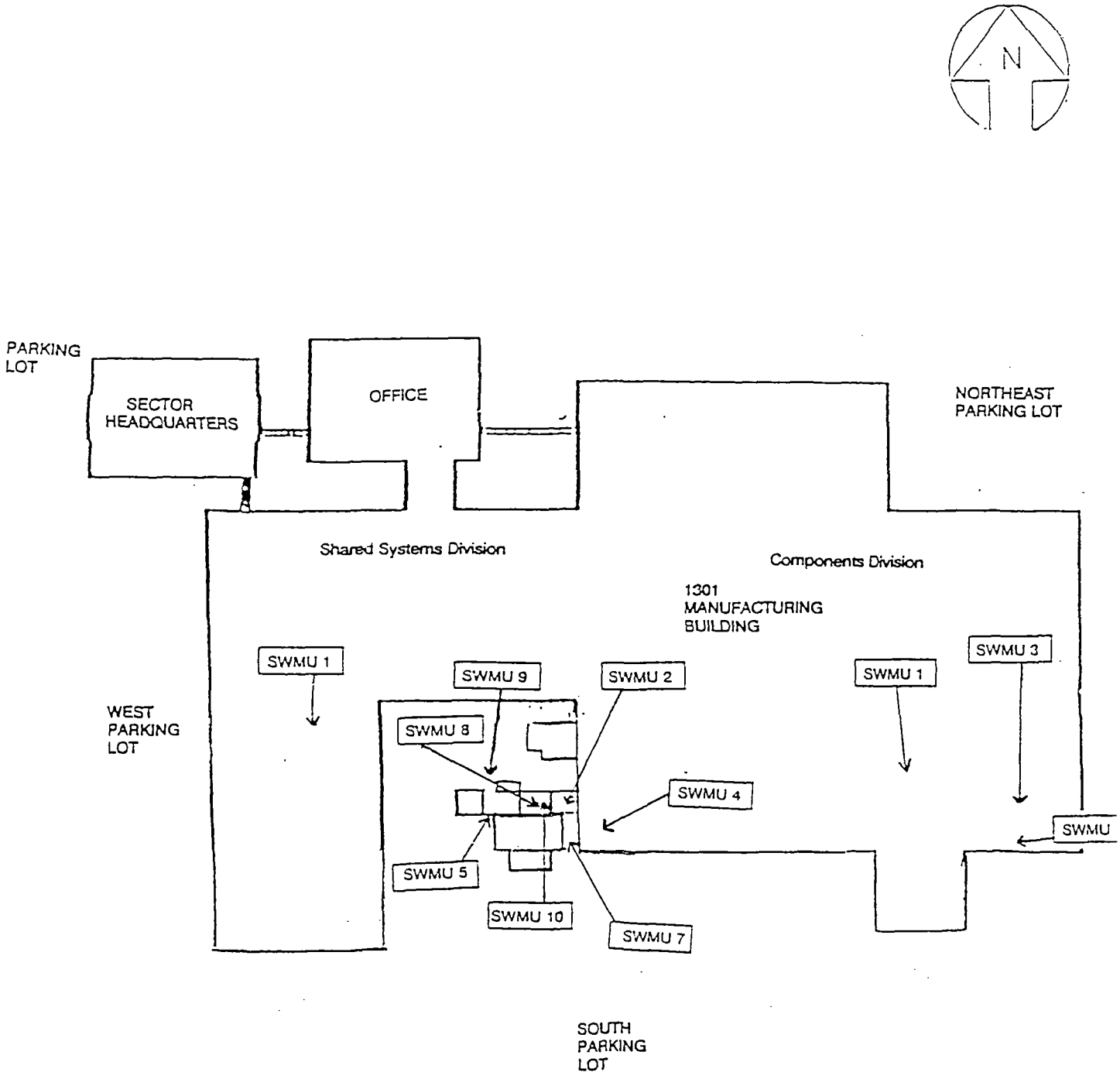
TABLE 1

SOLID WASTE MANAGEMENT UNITS

SWMU Number	SWMU Name	RCRA Hazardous Waste Management Unit[a]	Status
1	Satellite Accumulation Areas	No	Active
2	Hazardous Waste Storage Area	No	Active
3	Grit Cone Accumulation Area	No	Active
4	PCB Accumulation Area	No	Active
5	Solid Waste Drum Storage Area	No	Active
6	Wastewater Treatment System	No	Active
7	Ground Water Remediation Unit	No	Active
8	Former Container Storage Area	Yes	Inactive, RCRA closed in July 1988
9	Former Waste Solvent UST	Yes	Inactive, RCRA closed in February 1987
10	Former "Oil House" Sump	No	Inactive, not used since 1988

Note:

[a] A RCRA hazardous waste management unit is one that currently requires or formerly required submittal of a RCRA Part A or Part B permit application.



Solid Waste Management Units (SWMU)

1. Satellite Accumulation Areas
2. Hazardous Waste Storage Area
3. Grit Cone Accumulation Area
4. PCB Accumulation Area
5. Sloid Waste Drum Storage Area
6. Wastewater Treatment System
7. Ground Water Remediation Unit
8. Former Container Storage Area
9. Former Waste Solvent Underground Storage Tank
10. Former "Oil House" Sump

Motorola, Inc.
Schamburg, Illinois

Figure 2
FACILITY LAYOUT

Resource Applications, Inc.

Scale: 1" = 300'

Source: Modified from Motorola, 1992c

TABLE 2
SOLID WASTES

Waste/EPA Waste Code[a]	Source	Solid Waste Management Unit
Spent TCA/F001	Degreasing operations	1, 2, 8, 9, and 10
Spent Methanol/F003	Parts cleaning/ degreasing operations	1, 2, 8, and 9
Waste Methanol-Contaminated Rags/F003	Parts cleaning/ degreasing operations	1 and 2
Waste Terpene/D001	Cleaning operations	1 and 2
Waste D-Limonene/D001	Cleaning operations	1 and 2
Waste Kerosene Sludge/D001	Quartz cutting, milling, polishing	1 and 2
Waste Kerosene Sludge Contaminated With Freon/F001	Quartz cutting, milling, polishing	1 and 2
Waste Ethylene Glycol/D001	Quartz cutting	1 and 2
Waste Flammable Liquid Solvent Mixture Containing Isopropanol (D001), Acetone (F003), and Toluene (F005)	Preparation of printed circuit boards	1, 2, 8, 9, and 10
Waste Soldering Dross/D008	Soldering operations	1 and 2

Notes:

[a] Not applicable (NA) designates nonhazardous waste.

[b] Waste stream no longer generated by the facility.

TABLE 2 (continued)

SOLID WASTES

Waste/EPA Waste Code[a]	Source	Solid Waste Management Unit
Waste Flammable/Non-Flammable Aerosol Cans/D001	Hand-finishing operations	1 and 2
Waste Nitric Acid/D002	Quartz cleaning operations	1, 2, 6, and 8
Waste Hydrochloric Acid/D002	Quartz cleaning operations	1, 2, 6, and 8
Waste Aqua Regia/D002	Metal dissolving operations	1, 2, 6, and 8
Spent Chromic Acid/D002, D007	Plating operations	6 and 8
Rinsewaters, Waste Plating Solutions/D002	Plating and metal finishing operations	6
Wastewater Treatment Sludge/F006	Wastewater treatment system	6
Waste Oil/D001	Vehicle and machine maintenance	1 and 2
Contaminated Ground Water Possibly Containing TCA (F001), Acetone (F003), Toluene (F005), and Methylene Chloride (F001)	Oil House Release	7

Notes:

[a] Not applicable (NA) designates nonhazardous waste.

[b] Waste stream no longer generated by the facility.

TABLE 2 (continued)

SOLID WASTES

Waste/EPA Waste Code[a]	Source	Solid Waste Management Unit
Waste N-Methyl Pyrole/D002	Quartz cleaning operations	1 and 2
Medical Wastes/NA	Health services	1 and 2
Waste Flux Thinner/Ink Solvents/D001	Printing operations	1 and 2
PCBs/NA	Fluorescent light ballasts	4 and 5
Nonhazardous Grit/NA	Quartz crystal cutting, and polishing operations	3 and 5
Spent Freon/F001[b]	Degreasing operations	8
Spent Methylene Chloride/F001[b]	Degreasing operations	8, 9, and 10

Notes:

[a] Not applicable (NA) designates nonhazardous waste.

[b] Waste stream no longer generated by the facility.

thinner/ink solvents (D001); medical wastes; waste PCBs (ballasts); and a nonhazardous waste grit. Wastes generated in the past but which are no longer generated include spent Freon (F001) and spent methylene chloride (F001).

Motorola conducts various degreasing and parts cleaning operations within the Components and Shared Systems Divisions. Spent TCA (F001) and spent methanol (F003) are generated from the degreasing of quartz crystals and cleaning soldered components. Generated at a rate of about 200 gallons per month, the wastes are initially managed in SWMU 1 (in 5-, 15-, and 55-gallon containers) before being transferred to SWMU 2. Safety-Kleen Envirosystems (SKE), of Dolton, Illinois, picks up the wastes for recycling and fuel blending purposes. In the past, spent TCA (F001) was managed in SWMUs 8, 9, and 10. When stored in SWMU 8, the waste was held primarily in 55-gallon drums and then transferred to SKE for disposal or reclamation. Spent TCA (F001) was also held in the Former Waste Solvent UST (SWMU 9) before being reclaimed by Chem-Clear of Chicago, Illinois. Spent TCA (F001) which migrated to on-site soils from SWMU 10 (see Section 2.4 for more detail) was pumped out via a Dense Non-Aqueous Phase Liquid (DNAPL) system. SKE then picked up this waste for disposal or reclamation purposes. Spent methanol (F003) was formerly stored in SWMU 8, primarily in 55-gallon drums, before being taken to unspecified off-site facilities. This waste was also stored in the Former Waste Solvent UST (SWMU 9) and was reclaimed by Chem-Clear upon the removal of the unit in 1985.

Waste methanol-contaminated rags (F003) are generated during the quartz cutting process. The rags are used to wipe off excess methanol solvent used for degreasing the crystals. The rags are managed in SWMU 1 in various-sized containers (5-, 15-, and 55-gallon drums) before being transferred to SWMU 2. The waste is then picked up by Rollins Environmental Services, Deer Park, Texas (Rollins) for disposal. Waste methanol-contaminated rags are generated at an approximate rate of one 55-gallon drum per month.

The facility generates waste combustible liquids such as waste terpene (D001) and waste D-limonene (D001) in the process of cleaning printed circuit boards. This waste is picked up by SKE for fuel blending and recycling purposes. Each of these wastes are generated at an approximate rate of 10 to 20 gallons per month and are managed initially in SWMU 1. Waste terpene (D001) and waste D-limonene (D001) are collected in various sized containers (5- and 15-gallon drums) within

SWMU 1. Prior to being picked up by SKE, the wastes are moved to SWMU 2 and stored in 55-gallon drums.

Waste kerosene sludge (D001) and kerosene sludge contaminated with Freon (F001) are generated from the facility's quartz crystal cutting, polishing, and milling (crushing) operation. The waste stream produced is a solid/sludge from the cutting, polishing, and milling of the crystals. The solid material is unpumpable and consists primarily of quartz debris and kerosene. Some of this sludge is accumulated in drums that previously contained Freon, resulting in further contamination. This waste, generated at a rate of 220 gallons annually, is picked up by SKE for disposal. It accumulates in various sized containers (5- and 15-gallon drums) within SWMU 1 and is then transferred to SWMU 2 where the sludge wastes are kept in 55-gallon drums prior to disposal.

Waste ethylene glycol (D001) is also generated from the process of cutting the quartz crystals. The waste stream produced is liquid in form, and is pumpable. The waste consists of minimal quartz debris and ethylene glycol. Initially, waste ethylene glycol (D001) is collected in various sized containers (5- and 15-gallon drums) within SWMU 1 before being transferred to SWMU 2, where it is stored in 55-gallon drums. SKE then picks up this waste for disposal. Waste ethylene glycol (D001) is generated at an approximate rate of 50 gallons per year.

A waste flammable liquid solvent mixture of spent isopropanol (D001), acetone (F003), and toluene (F005) is generated during the surface preparation of printed circuit boards prior to wave soldering operations. A flammable flux is applied to the boards before soldering. This waste accumulates in various sized containers (5- and 15-gallon drums) in SWMU 1 and is then transferred to SWMU 2 for storage, where it is held in 55-gallon drums. SKE picks up the waste for disposal. The waste is generated at a rate of 150 gallons per month. This mixture of wastes was also managed in SWMU 8 in the manners described above. From SWMU 8, the wastes were picked up by SKE for disposal. The waste solvent mixture was also stored in SWMU 9 and reclaimed by Chem-Clear of Chicago, Illinois, upon the unit's removal in 1985. The waste solvent mixture managed in SWMU 10 migrated to the on-site soils (see Section 2.4 for more details), from which it was then pumped out using the DNAPL system and transferred to Rollins.

In the soldering process, a waste soldering dross (D008) is generated. This dross, which

contains lead, is reclaimed and reused by Motorola. Occasionally, the dross becomes too heavily contaminated from the lead solder and is rendered useless. The dross is then "dumped" into molds and dried. Initially, the waste soldering dross (D008) is managed in SWMU 1 in lined metal containers. The resulting blocks are taken to SWMU 2 and stored as ingots on pallets. United Refinery, Chicago, Illinois, picks up this waste for recovery and disposal. In 1991, Motorola generated about 1,000 pounds of this waste.

The facility also generates flammable and non-flammable waste aerosol cans (D001) from its hand finishing operations. The aerosol-contaminated cans, generated at a rate of 60 gallons per year, are accumulated in SWMU 1 as lab packs in 55-gallon drums. The drums are then stored in SWMU 2 prior to being picked up by Rollins for disposal.

Nitric acid and hydrochloric acid are applied to crystals as cleaning agents. Spent nitric acid (D002) and spent hydrochloric acid (D002) are generated from quartz cleaning operations. Each waste corrosive acid is collected in various sized containers (5- and 15-gallon drums) in SWMU 1. From SWMU 1, the waste acids are transferred to SWMU 2 or SWMU 6. In SWMU 2, the waste is held in 55-gallon polyethylene drums prior to being picked up by Rollins for disposal. Waste that is managed in SWMU 6 undergoes on-site treatment. Both acids were formerly managed in SWMU 8 in 55-gallon polyethylene drums. From SWMU 8, the corrosive wastes, each generated at a rate of 20 to 30 gallons per year, were transferred to Rollins for treatment.

Another corrosive waste generated is waste aqua regia (D002), a mixture of nitric and hydrochloric acids. This mixture is used to dissolve metal. This waste, generated at an approximate rate of 5 gallons per month, is collected in various sized containers (5- and 15-gallon drums) in SWMU 1 and managed in 55-gallon polyethylene drums in SWMU 2. From SWMU 2, an unspecified off-site facility picks up the waste for disposal. Some of the waste aqua regia (D002) is introduced from SWMU 1 into SWMU 6 for on-site treatment. In the past, this waste was also stored in 55-gallon polyethylene drums in SWMU 8 before being taken for off-site treatment by Rollins.

Spent chromic acid (D002, D007), rinsewaters (D002), and waste plating solutions (D002) are generated during the plating process at Motorola. The acid is used to strip away excess plating material. The acid undergoes reduction in the Wastewater Treatment System (SWMU 6), and the

resulting rinsewaters are managed in the flow-through system of SWMU 6. Rinsewaters and plating solutions are generated at a rate of 37.4 million gallons per year. In the past, waste chromic acid (D002, D007) was stored in SWMU 8 in 55-gallon polyethylene drums prior to being picked up by Rollins for treatment.

All wastewaters (corrosive liquids, plating solutions) generated from Motorola's operations are pretreated in the Wastewater Treatment System (SWMU 6). Wastewater treatment sludge (F006) is generated at a rate of 8 cubic yards per year and is collected into 1-cubic yard tyvek bags. The bagged waste is picked up by Envirite Corporation of Harvey, Illinois, for treatment.

Waste oil (D001) is generated from the facility's vehicle and machine maintenance operations. Oil used for operating the facility's forklifts and compressors becomes spent and is then managed in 55-gallon steel drums in SWMU 1. The waste oil generated is not a hazardous waste but is listed as such so that SKE will accept it for disposal purposes. Prior to disposal, the waste oil is stored in SWMU 2. Generated at a rate of about 1,000 pounds per month, SKE picks up the waste for recycling purposes.

Waste solvents from contaminated ground water were generated due to a release of waste solvents from the Former "Oil House" Sump (SWMU 10). Waste TCA (F001), acetone (F003), toluene (F005), and methylene chloride (F001) were held inadvertently and therefore managed by SWMU 10. The waste solvents were recovered (exact quantity unknown) and reclaimed by SKE. Ground water monitoring wells were installed as part of a remediation project for the contaminated area. Samples drawn from these wells were treated/managed in the Ground Water Remediation Unit (SWMU 7). After treatment, ground water ultimately discharges to the sanitary sewer of MWRDGC. SWMU 7 operates on a continuous basis and samples are treated periodically. However, no quantity of treated samples was provided in files or interviews with facility representatives.

Motorola uses N-methyl pyrole (D002) as a cleaning agent for its crystals. The waste material is contaminated with acids also used in the process of cleaning the crystals. Waste N-methyl pyrole is lab packed in various-sized containers (5- and 15-gallon drums) and is transferred from SWMU 1 to SWMU 2. Rollins picks up this waste for disposal. Waste N-methyl pyrole (D002) is generated at an approximate rate of 30 to 50 gallons annually.

Various types of wastes are accumulated, lab packed, and managed in various-sized containers (boxes, pails, 5-, 15-, and 55-gallon drums) in SWMU 1. These wastes include medical wastes, generated from health services at an approximate rate of 30 pounds per month, and waste flux thinner/ink solvents (D001), generated from soldering and print shop operations at an approximate rate of 60 gallons per year. Lab packs are stored in SWMU 2 in containers (mentioned above) before Rollins takes them for disposal.

Waste polychlorinated biphenyls (PCBs) are accumulated in 55-gallon drums in SWMU 4 and transferred to SWMU 5 for storage. The waste originates from fluorescent light ballasts used by Motorola. Rollins picks up the waste for disposal. Waste PCBs are generated at an approximate rate of 30 to 35 55-gallon drums per year.

The facility generates a nonhazardous grit waste in the process of cutting and polishing quartz crystals. The grit is applied as a lapping compound and is managed in SWMU 3, which acts as a filter or settling chamber. The waste is dewatered and discharged into a steel 55-gallon drum. From there, the closed drum of waste is stored in SWMU 5 before Browning-Ferris Industries (BFI) of Zion, Illinois, picks it up for disposal. No rate of generation for this material was provided by facility representatives nor was there a rate provided within IEPA and EPA files.

In the past, Motorola used Freon and methylene chloride for degreasing purposes but no longer does so. Spent Freon (F001), which was generated at an approximate rate of 800 gallons per year, was formerly managed in SWMU 8, primarily in 55-gallon drums. This waste was then picked up for disposal SKE. Spent methylene chloride (F001) was formerly managed in SWMU 8 in 55-gallon drums before being transferred to SKE. Also, spent methylene chloride (F001) was stored in SWMU 9 and reclaimed by Chem-Clear of Chicago, Illinois, upon the tank's removal in 1985. This waste was also managed in SWMU 10, from which it then migrated to on-site soils (see Section 2.4 for more detail). From there this waste was pumped out using the DNAPL system and reclaimed by SKE. Facility representatives were unable to provide a rate of generation for waste methylene chloride and it is unknown exactly when the company stopped using methylene chloride. Since October, 1991, Motorola stopped using Freon as a degreaser.

2.4 HISTORY OF DOCUMENTED RELEASES

This section discusses the history of documented releases to ground water, surface water, air, and on-site soils at the Motorola facility in Schaumburg, Illinois.

On October 5, 1983, Motorola had an accidental chemical release at its Schaumburg facility. The suspected chemical involved was an unspecified floor cleaning compound. The company estimated that 1 quart of this material was accidentally released into a storm drain that feeds into an unlined open drainage ditch. This drainage ditch discharges to one of Motorola's two on-site retention ponds. The storm drain where the release occurred was on the south side of the facility. Four dead fish were found in the area of the open drainage ditch where the floor cleaning compound supposedly entered. Motorola reported the release to the Illinois Emergency Service and Disaster Agency (IESDA) via an emergency response number and also notified IEPA of the incident. Subsequent actions taken by the company included the posting of "No Dumping" signs near all storm drains and the issuance of instructions to outside janitorial services not to discard materials into storm drains. According to an October 18, 1983 letter from Motorola to IEPA, an IEPA official determined that, due to the small amount of chemicals involved and the conscientious actions taken by Motorola in reporting the spill, the matter was resolved (Motorola, 1983).

During the excavation and removal of the Former Waste Solvent UST (SWMU 9) on December 20, 1985, 25 to 30 cubic yards of backfill (excavated soil) were contaminated with the contents of the tank. Samples of the backfill and excavated area were collected and analyzed for levels of TCA (F001), acetone (F003), toluene (F005), methylene chloride (F001), and isopropanol (D001). Concentrations of these solvents were found to be well below EPA maximum contaminant levels for all samples taken. Also, analyses for volatile organic compounds revealed concentrations below 10 ppm, indicating the absence of hazardous levels of contamination in the backfill and excavated area (IT Corporation, 1986). The backfill was subsequently collected and disposed of at an unspecified nonhazardous solid waste landfill and the excavated area was filled and repaved. IEPA approved the closure of SWMU 9 on February 18, 1987 (IEPA, 1987a).

On September 8, 1987, a fire in the area of the company's plating facility occurred. The probable cause of the fire was an electric heater that was inadvertently left on. The heater apparently

melted and then ignited a plastic tank, which held an estimated 10 gallons of sodium cyanide plating solution. The emanating heat set off two automatic sprinkler heads which within a reported 20 minutes, released 1,200 gallons of water. The resulting solution of water mixed with the contents of the flamed tank was contained by the fire department. Other regulatory agencies that were notified were: Metropolitan Water Reclamation District of Greater Chicago (MWRDGC), the Illinois State Police Hazardous Materials Spill Team, IEPA, and IESDA (IEPA, 1987b). Initially it was believed that the resulting solution entered a drain located in the plating room. However, according to facility representatives, the drain was discovered to have been plugged sometime shortly after the facility was constructed. Therefore, no material escaped nor was there a release of the subject material. Personnel from Motorola's Environmental and Safety Division then used wet/dry vacuum cleaners to collect approximately 1,200 gallons of water, which was then treated through the company's on-site Wastewater Treatment System (SWMU 6). Sample analysis of the treated wastewater was performed and the results were provided to RAI by Motorola (Motorola, 1992b).

On March 21, 1988, Motorola was informed by its consultants, Environmental Resources Management, Inc., (ERM) that approximately 1,000 pounds of waste solvents (TCA, acetone, toluene, and methylene chloride) had been released into the soil beneath an area of the facility known as the Oil House (Motorola, 1988b). The Oil House, which is Motorola's current Hazardous Waste Storage Area (SWMU 2), was used for the storage of raw materials and spent chemicals (spent chemicals included: toluene, methylene chloride, and TCA). Based on discussions with Motorola personnel, the release appears to have occurred over a period of a number of years. The periodic use of waste TCA (F001), acetone (F003), toluene (F005), and methylene chloride (F001) to clean the floor of the Oil House caused liquid residuals to drain into a 2-foot by 2-foot concrete floor sump (SWMU 10) and then ultimately to migrate beneath a floor slab onto on-site soils. Oral notification of the incident was made on March 22, 1988, when Motorola contacted the National Response Center, IESDA, and the Schaumburg Fire Department (Motorola, 1988b). On June 30, 1988, Motorola met with IEPA to discuss a cleanup project, including ground water monitoring well construction. The company then retained ERM to develop a work plan to identify the nature of contamination. The plan was submitted in August 1988 and subsequently approved by IEPA. Results of ground water sampling in November 1988 showed that spent TCA (F001), acetone (F003), toluene (F005), and methylene chloride (F001) had made their way into the granular backfill of an underground fire protection tank located to the south of the Oil House. Shallow monitoring wells

were installed to monitor ground water contamination. Deep monitoring wells were installed to monitor the glacial till aquifer. Samples from the wells showed that concentrations of TCA, acetone, toluene, and methylene chloride were found to be well below EPA drinking water standards. In order to recover the accumulated solvent from the backfill of the fire protection tank, an interim Dense Non-aqueous Phase Liquid (DNAPL) System was installed. Approximately 2,000 gallons of solvent were recovered from the subsurface and transferred off site to SKE for reclamation (Motorola, 1992a). The reason for the discrepancy between the amount released and amount recovered is not known. Motorola then installed a Ground Water Remediation Unit (SWMU 7) to contain the contamination plume and to remediate ground water. The unit, located to the south of the current Hazardous Waste Storage Area (SWMU 2), consists of a solvent/water separator, an air stripper, and a solvent storage tank. An operating permit for the air stripper was issued to Motorola by IEPA on March 5, 1990. The complete system was activated on April 12, 1990. Motorola indicated that after the free phase solvent has been completely removed, it would begin soil remediation and cleanup (IEPA, 1988b, Motorola, 1992a).

On August 11, 1989, an estimated 500 gallons of product No. 2 Fuel Oil were released from a 2,000-gallon capacity UST located northwest of the facility (IEPA, 1989). IEPA and IESDA were notified of the incident on November 17, 1989. The tank was removed in December 1989 as the facility decided it no longer needed the tank for storage purposes. A copy of the notification for tank removal (EPA Form 7530-1) was sent to the Illinois State Fire Marshal. The date of this notification was not specified. Ground water and soil samples collected from the resulting excavation were analyzed for levels of total petroleum hydrocarbons (TPH) and ignitability characteristics. All samples were found to have contained TPH concentrations below detection limits and flash points of greater than 200 degrees Fahrenheit (°F) (Motorola, 1990b). According to facility representatives, the Illinois State Fire Marshall approved the removal of the former tank.

On January 19, 1990, another documented release occurred at the Motorola facility. The release originated from a 13,000-gallon aboveground, concrete holding tank located in the basement of the company's MIS Building. The material released was a solution consisting of 41,600 gallons of water and 2.5 gallons of Cooling Water Treatment 171 (CWT), a product manufactured by Erickson Chemical Company. The solution was used in the company's cooling system. The volume of the solution was managed in both the aboveground tank and a condenser water system, which held the

majority of the solution. CWT contained 32 percent sodium bichromate, 6 percent zinc sulfate, 3 percent sulfuric acid, and 59 percent water by weight. The release, a seepage of material to the subsurface, occurred over a 2-day period and was reported to the National Response Center, IESDA, and the Cook County Emergency Service and Disaster Agency on January 26, 1990. The incident was given an IESDA Incident Identification Number 900248 and a National Response Center Number 1931 (IEPA, 1990). With approximately 1 foot of liquid remaining in the tank, it was calculated that 11,500 gallons of the CWT solution had escaped. The on-site areas suspected of contamination were the area near the release (under the basement of the MIS Building), an underground section of the storm drainage system, and a section of a southwest flowing open drain channel. It was suspected that ground water beneath the MIS Building had been impacted by the release. Remedial actions involved pumping the storm sewer water and disposing of it at Envirite Corporation. Subsequent ground water sampling and analyses for chromium contamination indicated that chromium concentrations around the affected area were well below the 0.05 parts per million (ppm) detection level. Water samples from a storm sewer manhole near the MIS Building and from open drainage channels were collected. However, analytical results demonstrated that the release did not contribute enough material to produce significant detectable chromium concentrations. The tank was resealed and repaired on January 27, 1990. Furthermore, Motorola then installed a 0.375-inch-thick rubber liner inside the tank. In a February 9, 1990 letter to IESDA, Motorola indicated that the use of CWT was a one time occurrence and that the company currently does not use chromium-containing additives in its cooling system (Motorola, 1990a). A June 26, 1990 conciliation agreement between Motorola and MWRDGC indicated that compliance regarding the CWT release was achieved and has been maintained since January 31, 1990 (Motorola, 1990c).

2.5 REGULATORY HISTORY

Motorola submitted a Notification of Hazardous Waste Activity form to EPA on August 7, 1980, designating itself as a generator, transporter, and treatment, storage, or disposal (TSD) facility (Motorola, 1980a). A subsequent notification was submitted by Motorola on August 20, 1980, designating the company as a TSD facility only (Motorola, 1980b). A RCRA Part A permit application was submitted by Motorola on November 18, 1980, listing D001, D002, F001, F003, and F005 wastes. The permit indicated that D001, D002, and F001 wastes were managed in a 2,500-gallon capacity container storage area (S01) (referring to SWMU 8), while D001, F001, F003 and

F005 wastes were managed in a 6,000-gallon storage tank (S02) (referring to SWMU 9) (Motorola, 1980c). According to documents in IEPA files, Motorola's S01 unit managed wastes which were characteristically ignitable (D001) and corrosive (D002), as well as spent degreasing solvents (F001) and spent plating bath solutions (D002). Documents indicated that the S02 unit was used for storing spent chlorinated solvents (D001, F001, F003, F005). According to the Part A permit application, 140,000 pounds of waste chlorinated solvents were estimated as being generated over the course of a year. In addition, 28,000 pounds of D001 waste, 17,000 pounds of D002 waste, and 144,000 pounds of F001 waste were estimated as being generated and stored in S01 storage during the course of a year.

Closure activities for Motorola's S01 and S02 units followed as Motorola wished to obtain status as a generator only. On January 16, 1986, a closure plan for Motorola's Former Waste Solvent UST (SWMU 9) was approved by IEPA (IEPA, 1986a). On June 12, 1986, an inspection by IEPA revealed that closure activities regarding SWMU 9 were performed in accordance with the approved closure plan (IEPA, 1987a). In a February 18, 1987 letter from IEPA to Motorola, the unit was approved closed and the corresponding modifications were made to Motorola's RCRA Part A permit application (IEPA, 1987a). On March 17, 1988, Motorola's closure plan (Motorola, 1988a) for its Former Container Storage Area (SWMU 8) was approved by IEPA (IEPA, 1988a). IEPA inspected the facility on July 13, 1988 and found that closure was completed in accordance with the approved plan. In a July 26, 1988 letter from IEPA to Motorola, SWMU 8 was officially approved closed and IEPA withdrew Motorola's RCRA Part A permit application and changed the company's status to generator only from TSD (IEPA, 1988c). As of July 26, 1988, Motorola has been required to meet standards applicable to large-quantity generators of hazardous waste. Currently, Motorola is a large- quantity generator of hazardous waste and stores hazardous wastes on site for less than 90 days.

Past inspections of Motorola have shown the facility to be in compliance with RCRA regulations set for generators and TSDs. A March 26, 1982 Interim Status Standards (ISS) Inspection by IEPA revealed an extremely well maintained facility that was in compliance with the applicable RCRA regulations (IEPA, 1982a, 1982b). On July 13, 1982, another ISS Inspection was performed by IEPA in order to verify that Motorola had submitted its emergency response contingency plans (IEPA, 1982c). At the time of this inspection, general RCRA compliance for TSDs and generators

was observed. Motorola was again found to be in compliance with generator requirements during a November 25, 1986 ISS Inspection conducted by IEPA (IEPA, 1986b). No other inspection reports were included within the compiled Preliminary Assessment files for Motorola.

Motorola currently holds an operating IEPA air permit. This permit, with Identification Number 031282 AAN, covers emission sources in Motorola's Electronic Component Production and Assembly Operations. The permit was issued on May 5, 1992 and expires on March 2, 1995 (IEPA, 1992d). The company was also issued three construction permits allowing it to install emission sources and/or air pollution control equipment consisting of convection reflow ovens and a hand soldering line and hood. These construction permits were granted to Motorola in April 1992 (IEPA, 1992a, 1992b, 1992c). The facility has no history of air permit violations and there is no history of odor complaints from area residents.

Motorola was issued a Construction Permit (No. 1986-EE-0406-2) by IEPA, allowing it to construct water pollution control facilities (additions to SWMU 6). The permit, issued on June 2, 1992, was a revision of two previously IEPA-approved construction permits of 1986 and 1988 (IEPA, 1992e).

Motorola currently has four USTs on site. Two 1,000-gallon capacity tanks, which were installed in 1988, are located at the southeast corner of the facility's "1305" Building and two 2,000-gallon capacity tanks, which were installed in 1989, are situated on the southeast corner of the MIS Building. All four tanks are used to store diesel fuel for the company's various lines of equipment. All of the tanks are connected to separate detection alarm systems and are composed of fiberglass. There is secondary containment in the form of a double wall for each of the four tanks. There have been no documented releases from the four diesel fuel USTs. In addition to the four current USTs, Motorola had a 6,000-gallon Former Waste Solvent UST (SWMU 9) that was RCRA closed on February 18, 1987, and a former 2,000-gallon diesel fuel UST that was removed in December 1989. Documented releases from these two former tanks have occurred in the past. A complete history and discussion on these tanks was provided earlier in Section 2.4 of this report.

Motorola is currently in the process of obtaining a National Pollutants Discharge Elimination System (NPDES) Permit for stormwater discharge to MWRDGC.

There has been no CERCLA (Superfund) Activity at Motorola's Schaumburg facility.

2.6 ENVIRONMENTAL SETTING

This section describes the climate; flood plain and surface water; geology and soils; and ground water in the vicinity of Motorola facility.

2.6.1 Climate

The climate in Cook County is continental, with wide variations in temperature between summer and winter. The average daily temperature is 49.2°F. The lowest average daily temperature is 21.4°F in January. The highest average daily temperature is 83.3°F in July (NOAA, 1990).

The total annual precipitation for Cook County is 33.3 inches. The mean annual lake evaporation for the area is about 29 inches (USDC, 1968). The 1-year, 24-hour maximum rainfall is 9.35 inches. Precipitation is somewhat evenly distributed throughout the year, with slightly more falling in the spring and summer (NOAA, 1990).

The prevailing wind is from the west. Average wind speed is highest in April at 12.0 miles per hour.

2.6.2 Flood Plain and Surface Water

The Motorola facility is located in a Zone C flood plain, indicating that it lies in an area of minimal flooding outside the 500-year flood plain (FEMA, 1982).

The nearest surface water body is a tributary to Salt Creek, located approximately 0.25 mile northwest of the facility. The tributary is used for drainage purposes, while Salt Creek is used for recreational and drainage purposes. The creek discharges to Busse Lake which ultimately discharges to the Des Plaines River. Surface water runoff from the Motorola facility would flow into the MWRDGC sewer system.

2.6.3 Geology and Soils

Site-specific soil information is available for the Motorola facility. Soils at the facility have been altered due to the construction of the facility. Soils are reported to consist of artificial fill material overlying a gray clayey till. The soils are reported to be urban land on the facility, mostly covered with buildings, streets, and parking lots (USDA, 1978). The till is the Palatine Moraine Unit of the Valparaiso Morainal System, and is composed of glacial drift from the Wadsworth till member of the Wedron formation. This material typically consists of gray clayey and silty clay till with black shale present as pebbles in the material (IT Corporation, 1986). The thickness of the glacial material is approximately 100 to 150 feet in the vicinity of the facility (Willman, 1971).

Site-specific information on bedrock is not available, so regional information is presented here. Bedrock formations beneath the site consist mainly of Silurian age dolomite, sandstone, and shale. These deposits are approximately 500 feet thick. The Silurian formations overlie shales and limestones of the Ordovician Maquoketa Group, which is about 250 feet thick. Beneath the Ordovician Maquoketa Rocks, are dolomites of the Galena-Platteville Group, sandstones of the Ancell (Glenwood-St. Peter) Group, and sandstones and dolomites of the Prarie du Chien Group. Beneath the Ordovician Rocks are sandstones, siltstones, and dolomites of Cambrian Age. Beneath the layered sedimentary rocks, Precambrian crystalline rocks form a relatively impermeable basement at depths of 3,000 to 5,000 feet below the surface (Suter, 1959).

2.6.4 Ground Water

Although ground water monitoring wells were installed to monitor contamination from a release from the former "Oil House," no site-specific ground water information for the Motorola facility was available within the file or from facility representatives. Therefore, regional ground water information is presented here. Ground water in northeast Illinois exists in four major aquifer systems. The systems, in order of descending depths, are: the glacial drift system, the shallow bedrock system, the Cambrian-Ordovician system, and the Mt. Simon system (Willman, 1971). The Village of Schaumburg obtains its drinking water from Lake Michigan.

In the shallow unconsolidated deposits of the glacial drift system, lateral flow is generally dependent upon the local topography which has been modified by urban development. Ground water flow is generally towards the nearest surface water body, which in this case is Salt Creek located northwest of the facility (Suter, 1959).

The shallow bedrock aquifer consists mainly of Silurian dolomite. This dolomite is typically 100 feet thick and occurs at a depth of 100 feet. Movement within the Silurian dolomite occurs in joints, fissures, solution on cavities, and bedding plane openings. Regional ground water movement and recharge within the Silurian system of northeastern Illinois tends to be from the northwest towards the southeast (Suter, 1959).

The deep bedrock aquifer systems, comprised mainly of sandstone and dolomite, include the Cambrian-Ordovician and Mt. Simon aquifer systems, which occur at depths of over 1,000 feet. The major aquifers in the deep systems are the Glenwood-St. Peter, Ironton-Galesville, and Mt. Simon Sandstones. Recharge to the Cambrian-Ordovician system occurs in areas of outcrop, shallow cover by glacial drift, and from leakage downward through the shallow bedrock system. Recharge to the Mt. Simon aquifer occurs from an outcrop region located in central southern Wisconsin (Willman, 1971).

2.7 RECEPTORS

The Motorola facility employs 9,500 people and occupies 325 acres in a mixed commercial and residential area in Schaumburg, Illinois. Schaumburg has a population of about 70,000 people.

The Motorola facility is bordered on the north and east sides by a residential and commercial area, on the west by a wetland area and commercial area, and on the south by the Illinois Northwest Tollway (I-90). The nearest school, Plum Grove Junior High School, is located about 1 mile northeast of the facility. Facility access is controlled by security guards and video monitoring 24 hours per day.

The nearest surface water body to the facility is a tributary to Salt Creek. This tributary is used for drainage purposes and is located about 0.25 mile northwest of the facility. Salt Creek is used for

drainage and recreational purposes, and discharges to Busse Lake, which ultimately discharges to the Des Plaines River.

Ground water is not used as a municipal water supply in the Schaumburg area. Rather, the area receives its water supply from Lake Michigan. The nearest drinking water well is located about 1 mile northeast of the facility. This well is upgradient of the facility. There are no other known wells within 3 miles of the facility.

Within a 2 mile radius, the facility is surrounded by various sensitive environments. Two on-site retention ponds at the facility's northwest and southeast boundaries have been delineated as 3-acre palustrine, open-water, permanently-flooded, excavated wetlands. Also, within about one mile to the west and southwest of the facility, there exists palustrine, emergent, seasonally-flooded, and palustrine, emergent, seasonally-flooded, partially drained wetlands. The sizes of these wetlands range from 5 to 25 acres. Within 2 miles north and northwest of Motorola, there are additional wetlands of the above-mentioned types and sizes (USDI, 1980). Approximately 2 to 3 miles southeast of the facility lies the Ned Brown Forest Preserve.

3.0 SOLID WASTE MANAGEMENT UNITS

This section describes the 10 SWMUs identified during the PA/VSI. The following information is presented for each SWMU: description of the unit, dates of operation, wastes managed, release controls, history of documented releases, and RAI's observations. Figure 2 shows the SWMU locations.

SWMU 1 **Satellite Accumulation Areas**

Unit Description: The Satellite Accumulation Areas consists of many separate indoor areas located throughout the facility. These areas, where hazardous wastes are collected in various-sized containers (5- , 15- , and 55-gallon), are all underlain by an epoxy-coated, 6-inch concrete floor. Since December 1989, all of the facility's floor drains have been plugged and to the knowledge of Motorola, no floor drains exist.

Date of Startup: This unit began operation in 1980 and different satellite accumulation areas were initiated in 1985, 1989, 1990, 1991 and 1992.

Date of Closure: This unit is active.

Wastes Managed: This unit manages the following wastes: spent TCA (F001); methanol (F003); waste methanol-contaminated rags (F003); waste terpene (D001); waste D-limonene (D001); kerosene sludge (D001); kerosene sludge contaminated with Freon (F001); waste ethylene glycol (D001); waste flammable liquid mixture containing isopropanol (D001), acetone (F003), and toluene (F005); waste soldering dross (D008); waste flammable/non-flammable aerosol cans (D001); waste nitric acid (D002); waste hydrochloric acid (D002); waste aqua regia (D002); waste oil (D001); waste N-methyl pyrole (D002); medical wastes; and waste flux thinner/ink solvents (D001). In the past, the unit also managed spent methylene chloride (F001) and spent Freon (F001).

	The wastes in SWMU 1 are taken to SWMU 2 for storage and ultimately transported off site to various disposal firms for disposal (see Section 2.3).
Release controls:	The accumulation areas are located on 6-inch-thick epoxy-coated concrete. Wastes were managed in closed containers. All accumulation areas were indoors. No floor drains are present.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, several different accumulation areas were viewed (see Photographs No. 9 and 10). RAI noticed no evidence of a release from this unit.
SWMU 2	**Hazardous Waste Storage Area**
Unit Description:	The Hazardous Waste Storage Area is located indoors, on the south side of the facility. The unit is approximately 1,600 square feet and has a 6-inch-thick epoxy-coated concrete floor. There are no floor drains in this unit.
Date of Startup:	This unit began operation in 1989.
Date of Closure:	This unit is active.
Wastes Managed:	This unit manages the following wastes: spent TCA (F001); spent methanol (F003); waste methanol-contaminated rags (F003); waste terpene (D001); waste D-limonene (D001); kerosene sludge (D001); kerosene sludge contaminated with Freon (F001); waste ethylene glycol (D001); waste flammable liquid solvent mixture containing isopropanol (D001), acetone (F003), and toluene (F005); waste

soldering dross (D008); waste flammable/non-flammable aerosol cans (D001); waste nitric acid (D002); waste hydrochloric acid (D002); waste aqua regia (D002); waste oil (D001); waste N-methyl pyrole (D002); medical wastes; and waste flux thinner/ink solvents (D001). In the past, the unit also managed spent methylene chloride (F001) and spent Freon (F001). Wastes from this unit are ultimately transported off-site to various disposal firms for disposal (see Section 2.3).

Release Controls:

The unit is indoors and is situated on a 6-inch-thick concrete epoxy-coated floor. The area is bermed. There are no floor drains and access to the unit is controlled through a locked door.

History of Documented Releases:

There have been no documented releases from this unit. However, there was a documented release from the former "Oil House" in 1988. The "Oil House" was situated at the location of the current Hazardous Waste Storage Area. For more about this release, see "History of Documented Releases" for SWMU 10, the Former "Oil House" Sump.

Observations:

During the VSI, drums (55-gallon steel and polyethylene) of the above mentioned wastes were observed. Drums were found on plastic pallets stacked two-high with four or less drums on each pallet. RAI observed many miscellaneous-sized containers (5-gallon pails, blocks, bags, and boxes) which contained the above mentioned wastes. RAI also observed drums of flammable liquid (D001), TCA (F001), waste oil (D001), and flux thinner (D001) located on the west side of the unit. These drums were used for consolidation of these types of wastes (see Photographs No. 4 and 5). RAI noticed no evidence of a release from this unit.

SWMU 3	**Grit Cone Accumulation Area**
Unit Description:	The Grit Cone Accumulation Area consists of a 200-gallon flow through chamber, which serves as a holding/settling tank for the company's quartz cleaning operation, and a 55-gallon steel drum which receives the solids portion from the settling tank (see Photograph No. 11).
Date of Startup:	This unit began operation in 1989.
Date of Closure:	This unit is active.
Wastes Managed:	This unit manages a nonhazardous grit (solids) that is produced from the company's quartz cleaning process. Waste from this unit is ultimately transported to an off-site facility for disposal after temporary storage in SWMU 5 (see Section 2.3).
Release Controls:	After grit is collected in the cone and transferred to the 55-gallon steel drum, the drum is then stored indoors on top of a 6-inch-thick concrete (epoxy-coated) floor with no floor drains (SWMU 5).
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, no grit was observed. A closed drum was situated at the base of the Grit Cone (see Photograph No. 11). There was no evidence of a release from this unit.
SWMU 4	**PCB Accumulation Area**
Unit Description:	The PCB Accumulation Area is located indoors and east of the Hazardous Waste Storage Area (SWMU 2). The unit consists of a 55-

	gallon steel drum located on a wooden pallet (see Photograph No. 8). The pallet and drum sit atop a 6-inch-thick concrete floor.
Date of Startup:	This unit began operation in 1989.
Date of Closure:	This unit is active.
Wastes Managed:	This unit manages waste PCBs. This waste is stored in SWMU 5 before ultimately being transported to an off-site facility for disposal (see Section 2.3).
Release Controls:	The wastes are stored inside steel 55-gallon drums on top of 6-inch-thick concrete. Once the drum is full, it is taken and stored in SWMU 5.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, one drum of PCB waste was on a wooden pallet in this unit. The drum was closed. RAI noted no evidence of a release from this unit.
SWMU 5	**Solid Waste Drum Storage Area**
Unit Description:	The Solid Waste Drum Storage Area is located indoors, in a 40-foot by 80-foot room that lies to the west of the Hazardous Waste Storage Area (SWMU 2). The room has a 6-inch-thick concrete floor that is epoxy coated. There are no floor drains in this unit.
Date of Startup:	This unit began operation in 1989.
Date of Closure:	This unit is currently active.

Wastes Managed:	This unit manages nonhazardous grit and PCB material. These wastes are transported to various off-site facilities for disposal (see Section 2.3).
Release Controls:	The wastes are stored in steel 55-gallon drums placed on plastic pallets. The pallets are stacked two-high, with four drums per pallet. The area is underlain by an epoxy-coated 6-inch-thick concrete floor. There are no floor drains in this unit.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, approximately 60 drums of grit and PCB waste were in the unit (see Photograph No. 2). RAI noted no evidence of release from this unit.

SWMU 6 **Wastewater Treatment System**

Unit Description:	The Wastewater Treatment System consists of a flow-through system and a batch system, both of which are contained indoors in a 20-foot by 30-foot room located in the southwest part of the facility. The room is underlain by a 6-inch-thick epoxy-coated concrete floor. Also, the room is surrounded by a berm (approximately 6 inches high). The flow-through system consists of five 250-gallon aboveground fiberglass cylindrical tanks where precipitation and chromium reduction occur. The flow through system also contains a sand filter, clarifier, backwash reservoir, filter press, and six holding tanks for off-specifications material. A flow meter and pH meter complete the system. The batch system consists of three fiberglass 1,000-gallon cylindrical aboveground tanks. This system receives concentrated material while rinsewaters are introduced to the flow-through system (see Photograph No. 12).

Date of Startup:	This unit began operation in 1986.
Date of Closure:	This unit is currently active.
Wastes Managed:	This unit manages waste chromic acid (D002, D007), nitric acid (D002), hydrochloric acid (D002), aqua regia (D002), rinsewaters (D002), waste plating solutions (D002), and wastewater treatment sludge (F006). The system treats 75,000 gallons of wastewater per day and ultimately discharges to the MWRDGC sanitary sewer. The sludge is filter-pressed and disposed of at an unspecified off-site facility.
Release Controls:	The unit is situated in a bermed room and is on a 6-inch-thick epoxy-coated concrete floor.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	The unit was operating at the time of the VSI and no evidence of a release was detected.
SWMU 7	**Ground Water Remediation Unit**
Unit Description:	The Ground Water Remediation Unit is located indoors in an 8-foot by 12-foot room (south of SWMU 2) and consists of a steel solvent/water separator, an air stripper, and a steel solvent storage tank. The unit is underlain by a concrete floor and there are no floor drains in the vicinity of this unit.
Date of Startup:	This unit began operation in 1989.
Date of Closure:	This unit is active.

Wastes Managed:	This unit manages ground water from facility grounds and handles (pumps and treats) 1,440 gallons per day. In the past, the unit managed ground water that possibly contained waste TCA (F001), acetone (F003), toluene (F005), and methylene chloride (F001). This water is then introduced into SWMU 6 and ultimately discharged to the MWRDGC sanitary sewer system. The solvents which are separated from the water are collected in 55-gallon steel drums and sent to SKE for reclamation.
Release Controls:	This unit is on a concrete floor and there are no floor drains in the vicinity of the unit.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of this VSI, no evidence of a release from this unit was observed (see Photograph No. 7).
SWMU 8	**Former Container Storage Area**
Unit Description:	The Former Container Storage Area is located indoors, north of the current Solid Waste Drum Storage Area (SWMU 5), and is currently used by the company for storing chemical raw materials (flammable and corrosive). The unit has an epoxy-coated 6-inch-thick concrete floor and a surrounding berm (approximately 6 inches high).
Date of Startup:	This unit began operation in 1980.
Date of Closure:	This unit was certified RCRA closed on July 26, 1988.
Wastes Managed:	The former unit was permitted to store 2,500 gallons of containerized hazardous wastes. These wastes were: spent TCA (F001), spent

methanol (F003), waste flammable liquid solvent mixture (containing isopropanol (D001), acetone (F003), and toluene (F005)), waste nitric acid (D002), waste hydrochloric acid (D002), waste aqua regia (D002), waste chromic acid (D002), spent Freon (F001), and spent methylene chloride (F001). The wastes were stored (segregated) in two diked areas which both sloped to low spots. These low spots were previously collection sumps with a capacity of 120 gallons. The sumps were filled to grade with grout in the fall of 1985. No drains were ever connected to the sumps. These wastes were ultimately transferred to various off-site facilities for disposal (see Section 2.3).

Release Controls: Wastes were stored in closed drums and containers and placed in diked areas.

History of Documented Releases: No releases from this unit have been documented.

Observations: At the time of the VSI, RAI did not detect evidence of a release from this unit. The area is now used for storage of chemical raw materials (see Photograph No. 3)

SWMU 9 **Former Waste Solvent Underground Storage Tank**

Unit Description: The Former Waste Solvent Underground Storage Tank was located outdoors, north of the Former Container Storage Area (SWMU 8), in a truck docking and service area. The unit was cylindrical and had a capacity of 6,000 gallons. The unit was composed of asphalt-coated steel with a thickness of 0.1875 inch. The tank, which was 8 feet in diameter and 16 feet long, was taken out of service in October 1983.

Date of Startup: This unit began operation in 1980.

Date of Closure:	This unit was removed in December 1985 and certified RCRA closed on February 18, 1987.
Wastes Managed:	This unit managed waste flammable solvents such as spent TCA (F001), spent methanol (F003), spent methylene chloride (F001), and a flammable liquid mixture containing spent toluene (F005), spent acetone (F003), and spent isopropanol (D001). Upon removal of the unit, the solvents were reclaimed by an off-site facility (see Section 2.3). The tank was sent off site to be decommissioned.
Release Controls:	The unit was removed in December 1985. Within the compiled documents, no evidence was found to suggest that this unit had release controls.
History of Documented Releases:	A release to on-site soils from this unit occurred in December 1985 during the excavation and removal of the unit. Subsequent sampling of the backfill and excavated area showed that levels of TCA (F001), acetone (F003), methylene chloride (F001), toluene (F005), and isopropanol (D001) were well below maximum contaminant levels. The backfill was disposed of at an unspecified nonhazardous solid waste landfill and the excavated area was filled and repaved. IEPA approved closure of the unit in February 1987.
Observations:	During the VSI, RAI reviewed the area where the unit was located. The area was flat concrete and there was no evidence of a release from the former unit (see Photograph No. 1).
SWMU 10	**Former "Oil House" Sump**
Unit Description:	The Former "Oil House" Sump was located beneath the former "Oil House" (which is now the current Hazardous Waste Storage Area,

SWMU 2). The unit was made of concrete and was 2 feet deep and 2 feet in diameter. The former "Oil House" was used for storing chemical raw materials and spent chemicals. The sump served as an emergency collection area.

Date of Startup: An exact date when this unit began operations is unknown. An estimate of this unit's startup date is 1980.

Date of Closure: This unit has been inactive since 1988, when it was crushed and filled to grade with concrete and epoxy.

Wastes Managed: This unit inadvertently managed spent TCA (F001), spent acetone (F003), spent toluene (F005), spent isopropanol (D001), and spent methylene chloride (F001). These chemicals were used in cleaning the floor of the former "Oil House." The waste solvents were collected using the Ground Water Remediation Unit (SWMU 7) and then transferred to an off-site facility (see Section 2.3).

Release Controls: The unit was destroyed and filled with concrete and epoxy. The unit had no release controls.

History of Documented Releases: On March 21, 1988, a release of TCA (F001), acetone (F003), toluene (F005), and methylene chloride (F001) to on-site soils occurred from this unit as part of the release from the "Oil House" Structure. Concentrations of the solvents in ground water samples were found to be well below drinking water standards. As part of a cleanup project with IEPA, Motorola is to perform soil vapor extractions.

Observations: During the VSI, the former sump was not visible. RAI did view the Hazardous Waste Storage Area (SWMU 2), the area where the former sump was located. RAI noted no evidence of a release from this unit.

4.0 AREAS OF CONCERN

RAI identified no AOCs during the PA/VSI. All releases were demonstrated to have been adequately remediated (see Section 2.4).

5.0 CONCLUSIONS AND RECOMMENDATIONS

The PA/VSI identified ten SWMUs and no AOCs at the Motorola facility. Background information on the facility's location; operations; waste generating processes and waste management practices; history of documented releases; regulatory history; environmental setting; and receptors is presented in Section 2.0. SWMU-specific information, such as the unit's description, dates of operation, wastes managed, release controls, history of documented releases, and observed condition, is presented in Section 3.0. AOCs are discussed in Section 4.0. Following are RAI's conclusions and recommendations for each SWMU. Table 3, at the end of this section, summarizes the SWMUs at the facility and the recommended further actions.

SWMU 1 **Satellite Accumulation Areas**

Conclusions: These areas throughout the facility are used for accumulating hazardous wastes prior to transferring them to the Hazardous Waste Storage Area (SWMU 2). The many accumulation areas are currently active and during the VSI, several were viewed (solder waste (D008), methanol (F003)). Wastes are managed indoors, in closed containers (55-gallon steel drums and other miscellaneous sized containers). The areas are situated on top of 6-inch-thick epoxy-coated concrete. No floor drains exist near the accumulation areas. Consequently, the potential for release to ground water, surface water, air, and on-site soils is low.

Recommendations: RAI recommends no further action for this unit at this time.

SWMU 2 **Hazardous Waste Storage Area**

Conclusions: This area is used for storing hazardous wastes for less than 90 days. The unit is located indoors and is underlain by 6-inch-thick epoxy-coated concrete. Wastes are stored in closed 55-gallon steel and polyethylene drums, as well as other miscellaneous-sized metal and plastic containers. Formerly, the area was the location of the "Oil House" and was used for storing raw materials

and spent chemicals. The ground beneath the area was remediated due to a release of solvents from a sump within this area (SWMU 10). Details of the release are discussed in Section 2.4 and under "History of Documented Releases" for SWMU 10 in Section 3.0. Contamination to environmental media from the "Oil House" is discussed later in this section, under SWMU 10. Potential for release to ground water, surface water, air, and on-site soils from SWMU 2 is low.

Recommendations: RAI recommends that remediation activities relating to the area of the Former "Oil House" Sump (SWMU 10) continue with oversight from IEPA. RAI recommends no further action for the current Hazardous Waste Storage Area at this time.

SWMU 3 **Grit Cone Accumulation Area**

Conclusions: This unit is indoors and serves as an area where a nonhazardous grit is collected into a steel 55-gallon drum, which is then closed and taken to SWMU 5 for storage. The drum and cone sit atop 6-inch-thick epoxy-coated concrete and there are no floor drains present. The potential for release to ground water, surface water, air, and on-site soils is low.

Recommendations: RAI recommends no further action for this unit at this time.

SWMU 4 **PCB Accumulation Area**

Conclusions: This unit is located indoors and is used as a temporary storage area for PCB waste. The waste is placed into a 55-gallon steel drum and the closed drum is then transferred to SWMU 5 for storage. The closed drum is situated on a wooden pallet that is located on top of 6-inch-thick epoxy-coated concrete. There are no floor drains present. The potential for release to ground water, surface water, air, and on-site soils is low.

Recommendations: RAI recommends no further action for this unit at this time.

SWMU 5 **Solid Waste Drum Storage Area**

Conclusions: This unit is used for storing closed 55-gallon steel drums of PCB wastes and nonhazardous grit. The unit is located indoors and is on 6-inch-thick epoxy-coated concrete. There are no floor drains present. The potential for release to ground water, surface water, air, and on-site soils is low.

Recommendations: RAI recommends no further action for this unit at this time.

SWMU 6 **Wastewater Treatment System**

Conclusions: This unit is used to treat the company's wastewater prior to discharge to the MWRDGC sewer. The wastewater is managed in steel tanks located indoors on 6-inch-thick epoxy-coated concrete. There are no floor drains present. The potential for release to ground water, surface water, air, and on-site soils is low.

Recommendations: RAI recommends no further action for this unit at this time.

SWMU 7 **Ground Water Remediation Unit**

Conclusions: This unit is used for monitoring ground water contamination at the facility. It was set up as part of a cleanup project regarding the Former "Oil House" Sump (SWMU 10). The unit is located indoors and is underlain by a 6-inch-thick concrete floor. No floor drains exist. The potential for release to ground water, surface water, air, and on-site soils is low.

Recommendations: RAI recommends no further action for this unit at this time.

SWMU 8 **Former Container Storage Area**

Conclusions: This unit was used for storing hazardous wastes of codes D001, D002, F001, and F007. The unit consisted of two diked areas where wastes were stored in various closed containers. The unit is now used for storage of chemical raw materials and is located on 6-inch-thick epoxy-coated concrete. The area is bermed (approximately 6 inches) for secondary containment. No floor drains exist. The unit was RCRA closed in March 1988. No past documented releases occurred from this unit. The past potential for release to ground water, surface water, air, and on-site soils was low.

Recommendations: RAI recommends no further action for this unit at this time.

SWMU 9 **Former Waste Solvent Underground Storage Tank**

Conclusions: This unit was used for storing flammable, chlorinated waste solvents. The unit was a steel cylindrical tank that was removed and decommissioned in December 1985. A release from the unit which impacted the excavated area and backfill occurred in December 1985 during the removal of the unit. However, sampling and analyses were performed on the backfill and excavated area and revealed concentrations of TCA (F001), acetone (F003), toluene (F005), and methylene chloride (F001) well below maximum contaminant levels. The unit was RCRA closed in February 1987. The past potential for release to ground water, surface water, and air was low. The current potential for release to ground water, surface water, air, and on-site soils is low as the unit no longer exists.

Recommendations: RAI recommends no further action for this unit at this time.

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SWMU 10 **Former "Oil House" Sump**

Conclusions: This unit inadvertently held spent TCA (F001), acetone (F003), toluene (F005), and methylene chloride (F001). A release from this unit to on-site soils and ground water occurred in March 1988 and the company agreed with IEPA to voluntarily clean up the surrounding area. A Ground Water Remediation Unit (SWMU 7) is currently in operation as part of the project to monitor the area for solvent contamination. The company plans to perform soil vapor extractions as well. The unit was located beneath what was the "Oil House" (which is currently the Hazardous Waste Storage Area, SWMU 2). The sump was destroyed and filled with concrete in 1988. The past potential for release to ground water, surface water, and air was low. The current potential for release to ground water, surface water, air, and on-site soils is low as the unit no longer exists.

Recommendations: RAI recommends continuing remediation activities with oversight from IEPA. Results of ground water monitoring indicated that contaminant levels in all samples were well below drinking water standards.

TABLE 3

SWMU SUMMARY

SWMU	Dates of Operation	Evidence of Release	Recommended Further Action
1. Satellite Accumulation Areas	1980 to present	None	No further action for this unit.
2. Hazardous Waste Storage Area	1989 to present	Soil beneath floor was contaminated with spent TCA (F001), acetone (F003), toluene (F005), and methylene chloride (F001). A ground water remediation unit was installed to remediate the area in 1989. Soil vapor extractions to be performed after May 1992.	Continue remediation activities, with oversight from IEPA, for the area relating to the Former "Oil House" Sump (SWMU 10). No further action for SWMU 2.
3. Grit Cone Accumulation Area	1989 to present	None	No further action for this unit.
4. PCB Accumulation Area	1989 to present	None	No further action for this unit.
5. Solid Waste Drum Storage Area	1989 to present	None	No further action for this unit.
6. Wastewater Treatment System	1986 to present	None	No further action for this unit.
7. Ground Water Remediation Unit	1989 to present	None	No further action for this unit.
8. Former Container Storage Area	1980 to 1988	None	No further action for this unit.

TABLE 3 (cont'd)

SWMU SUMMARY

SWMU	Dates of Operation	Evidence of Release	Recommended Further Action
9. Former Waste Solvent UST	1980 to 1983 (taken out of service); removed in 1985; RCRA closed in 1987	A release during removal in 1985 led to contamination of backfill and excavated area. Sampling and analyses showed concentrations of solvents to be well below maximum contaminant levels.	No further action for this unit.
10. Former "Oil House" Sump	1980 to 1988	Soil beneath floor was contaminated with spent TCA (F001), acetone (F003), toluene (F005), and methylene chloride (F001). A ground water remediation unit was installed to remediate the area in 1989. Soil vapor extractions to be performed after May 1992.	Continue remediation activities with oversight from IEPA.

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ATTACHMENT A

VISUAL SITE INSPECTION SUMMARY AND PHOTOGRAPHS

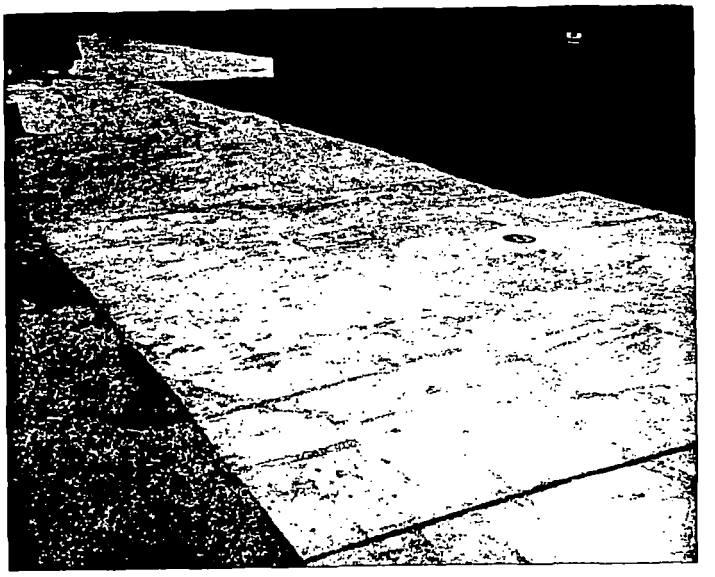
VISUAL SITE INSPECTION SUMMARY

Motorola, Inc.
1301 East Algonquin Road
Schaumburg, Illinois
ILD 079 763 140

Date:	August 4, 1992
Primary Facility Representative:	Rick Kathan, Manager, Environmental, Safety and Industrial Hygiene, Communication Sector
Representative Telephone No.:	(708) 576-5395
Additional Facility Representatives:	Chaitan Daiya, Sector Manager, Environmental, Safety and Industrial Hygiene Matthew C. Norton, Environmental Engineer, Communications Sector Jody Shapiro, Manager, Environmental, Safety and Industrial
Inspection Team:	Pete McLaughlin, Resource Applications, Inc. (RAI) John Wong, RAI
Photographer:	Rick Kathan, Motorola, Inc.
Weather Conditions:	Sunny, warm; temperature 80°F
Summary of Activities:	The visual site inspection (VSI) began at 9:30 a.m. with an introductory meeting. The inspection team explained the purpose of the VSI and the agenda for the visit. Facility representatives then discussed the facility's past and current operations, solid wastes generated, and release history. Facility representatives provided the inspection team with copies of requested documents. The VSI tour began at 12:30 p.m. The inspection team, along with various facility representatives, walked through and around the facility to observe areas where hazardous constituents and solid wastes were managed. Photographs of the various areas were requested by RAI and taken by Rick Kathan of Motorola, at his request. The first area viewed was an outdoor concrete surface where a Former Waste Solvent Underground Storage Tank (SWMU 9) was located. The inspection team was then directed inside the facility to observe Motorola's Solid Waste Drum Storage Area (SWMU 5). Next, a Former Container Storage Area (SWMU 8) for

hazardous wastes was viewed. Currently, the area is used for storing raw materials and virgin chemicals (segregated properly). The Hazardous Waste Storage Area (SWMU 2) was then observed. Within this area, Motorola also consolidates hazardous wastes into 55-gallon drums. The inspection team then observed Motorola's Ground Water Remediation Unit (SWMU 7), a PCB Accumulation Area (SWMU 4), and various Satellite Accumulation Areas (SWMU 1). Facility representatives then showed the inspectors an on-site Wastewater Treatment Unit (SWMU 6), a Grit Cone Accumulation Area (SWMU 3) where nonhazardous solid waste was collected, and a former drain where a suspected release of cyanide plating solution had occurred in the past.

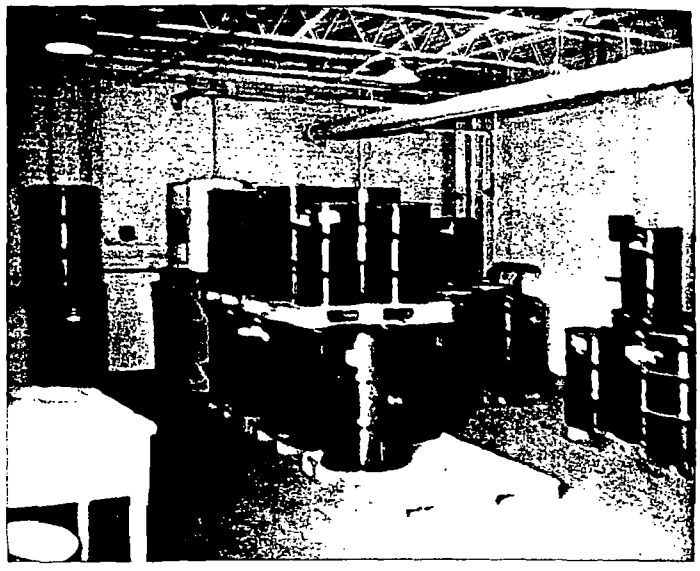
The tour concluded at 4:00 p.m., after which the inspection team held an exit meeting with facility representatives. The VSI was completed and the inspection team left the facility at 5:00 p.m.



Photograph No. 1 Location: SWMU 9
Orientation: Southeast Date: 08/04/92
Description: Area where the 6,000-gallon Former Waste Solvent Underground Storage Tank was located.

Photograph No. 2 Location: SWMU 5
Orientation: Southwest Date: 08/04/92
Description: The Solid Waste Drum Storage Area where PCB waste and nonhazardous grit is stored.

Photograph No. 3 Location: SWMU 8
Orientation: West Date: 08/04/92
Description: Former Container Storage Area for hazardous wastes. The area is now used for storing chemical raw materials.



Photograph No. 4
Orientation: Southeast
Location: SWMU 2 and 10
Date: 08/04/92
Description: View of the current Hazardous Waste Storage Area (SWMU 2), and the location of the Former "Oil House" Sump (SWMU 10).

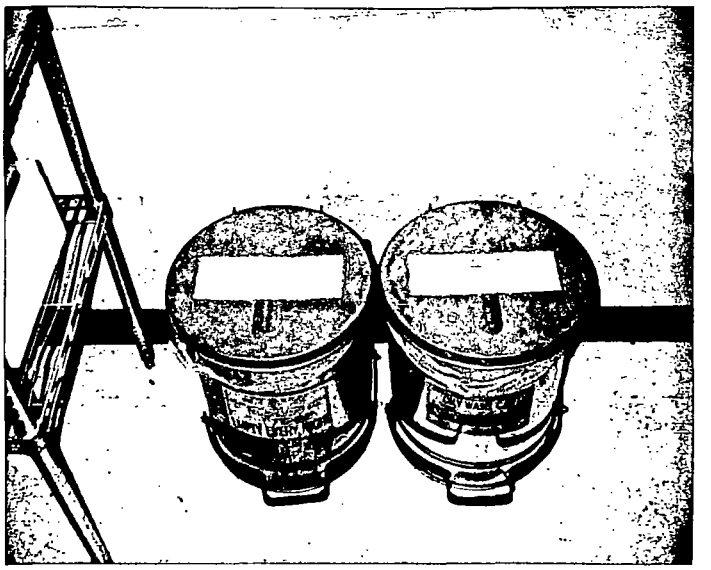
Photograph No. 5 Location: SWMU 2 and 10
Orientation: Southwest Date: 08/04/92
Description: View of the current Hazardous Waste Storage Area (SWMU 2). In this area of the room, different wastes are consolidated into larger drums.

Photograph No. 6 Location: SWMU 7
Orientation: South Date: 08/04/92
Description: View of the area where a concrete fire protection tank was located. In the background is a shed that houses the Ground Water Remediation Unit (SWMU 7).

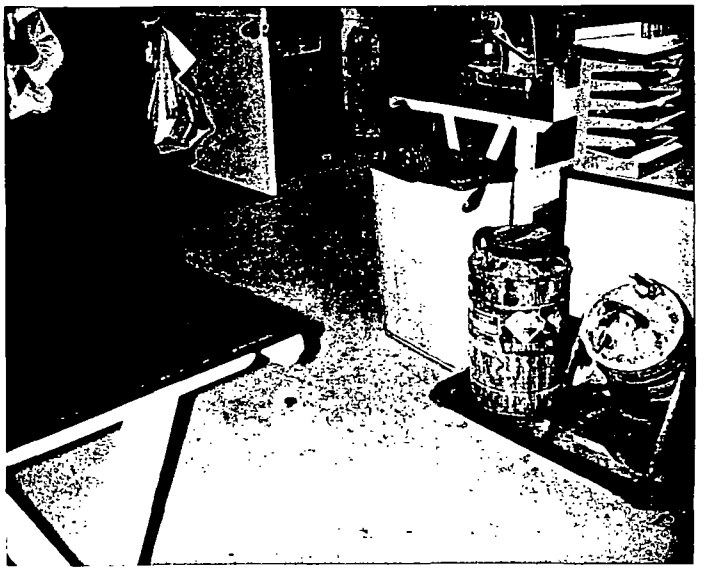
Photograph No. 7 Location: SWMU 7
Orientation: Southwest Date: 08/04/92
Description: View of the separator unit of the Ground Water Remediation Unit (SWMU 7).

Photograph No. 8
Orientation: Southwest
Description: The PCB Accumulation Area.

Location: SWMU 4
Date: 08/04/92

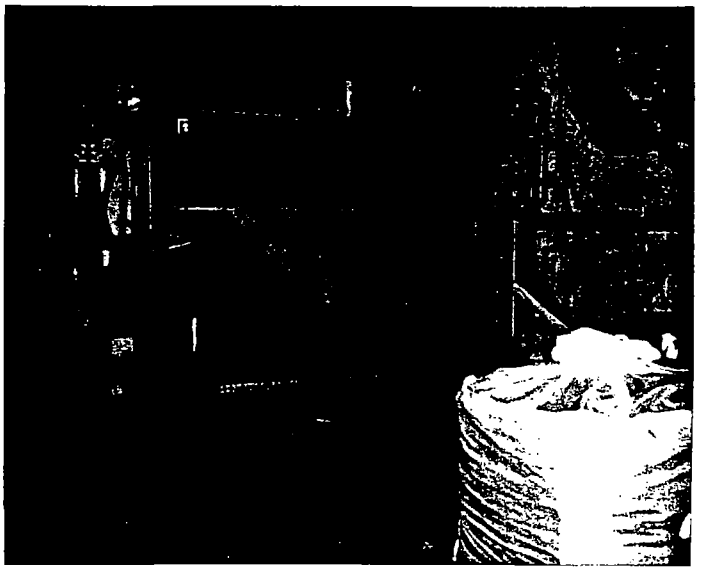


Photograph No. 9 Location: SWMU 1
Orientation: South Date: 08/04/92
Description: One of the Satellite Accumulation Areas (SWMU 1) for solder waste in Shared Systems Division.



Photograph No. 10 Location: SWMU 1
Orientation: Southwest Date: 08/04/92
Description: One of the Satellite Accumulation Areas (SWMU 1) for waste methanol in Components Division.

Photograph No. 11 Location: SWMU 3
Orientation: North Date: 08/04/92
Description: A view of the Grit Cone Accumulation Area (SWMU 3) in the room where the wastewater treatment system is located.



Photograph No. 12 Location: SWMU 6
Orientation: East Date: 08/04/92
Description: A view of the filter press unit of the wastewater treatment system.

ATTACHMENT B

VISUAL SITE INSPECTION FIELD NOTES

*

MOTOROLA, INC. 9:35 a.m. 5/4/92

SUAIL GODAMBE ESH

BOB HOLCOMB

RICK KATHAM — RESPONSIBLE FOR THIS SITE

JODY SERRIRO — MANAGER IND. SAFETY & HY

MATT NIRTIN — E.E.

CHAITAN DAVD — MANAGER

E — ART COMPLEX ; HOTEL ; ~~STEP MART~~ OFFICE COMPLEX

SITE C — NOT OWNED BY MOTOROLA (~½ ACRE)

Salt Creek

S — TOLLWAY

N — ART COMPLEX ; GAS STATION ; COMMERCIAL AREA

W — WETLAND AREA RESTAURANT BAR

└ 25 ACRE

NEAREST SCHOOL PLUM GRANE JR. HIGH 1 MILE

SHARED SYSTEM : ASSEMBLE BASE STATIONS

COMPONENTS DIV: QUARTZ CRYSTAL MANUFACTURING } LAND MOBILE PRODUCTS

WORLD HEADQUARTERS HERE ALSO

SHARED SYSTEM

LIGHT ASSEM ; CHIP PLACEMENT — INVOLVES SOME SOLDER

SOLDER DROSS TREATED AS RECLAIMABLE (SKIM[redacted])

IF DUMP RAW MATL DOES LEAD

SILVER CONTENT MAY BE HIGH

WASTE MGMT — UNITED REFINERY CHICAGO, IL TRANSPORTER ALSO

~ 1,000 POUNDS WHEN MANIFESTED : SOLDER POT DUMP

N.N. GRIT, WASTE OIL

NEED GBN RATES FOR N.N. WASTES

COMPONENTS DIVISION:

GROW QUARTZ OFF-SITE IN PA

BROUGHT & CUT TO SIZE SIZE DETERMINES FREQ.

CRYSTALS (CLEAN ROOM) ARE MOUNTED PLACED IN METAL HOUSING

WASTES: NON HAZ GRIT USED AS LAPPING COMPOND

DEIONIZER: SHIPPED BFI ZION, IL BFI TRANSPORT

SOLVENTS FOR DEGREASING

PRESENTLY FREON FREE 10/91

TCA: METHANOL USED AS DEGREASERS → F. BLOWING

RATES: SEE HAND OUT

SOLVENTS: ALL GO TO S.K. RECYCLED OR FUEL BLND

WASTE WATER TREATMENT SYSTEM

WASTEWATER IS ACID OR BASE MATERIAL

CYANIDE REDUCTION

CHROMIC ACID ⇒ CHROME REDUCTION

RINSE WATERS ARE THRU FLOW SYSTEM

CONCENTRATES ⇒ BATCH SYSTEM

CHROMIC ACID USED TO STRIP EXCESS PLATED MATL

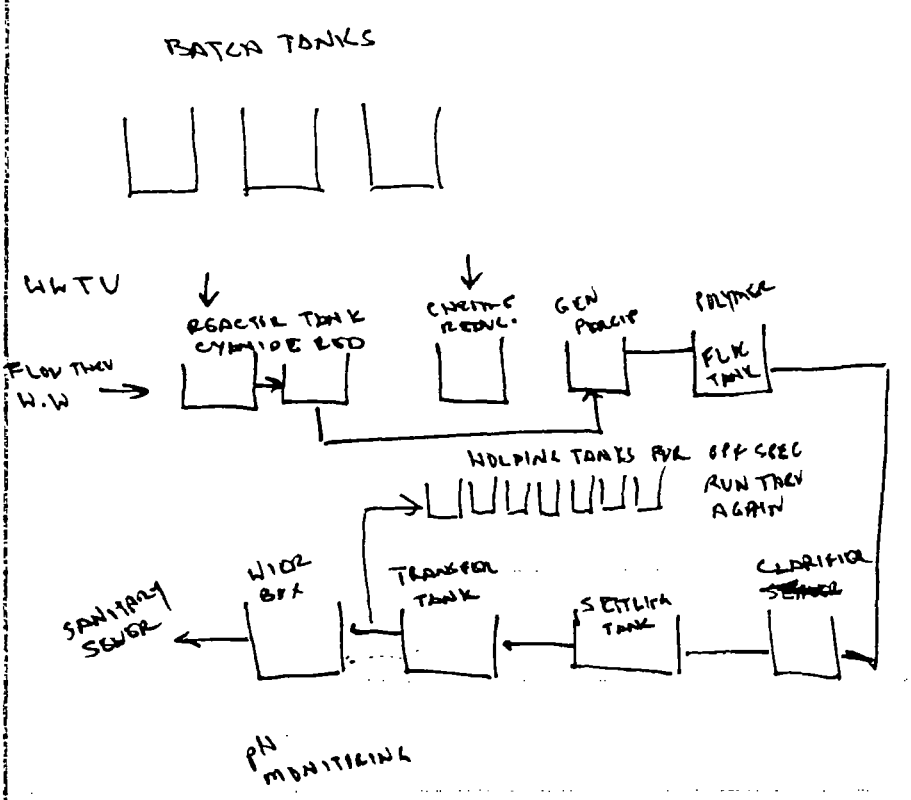
CYANIDE AS STRIP (GOLD) PLATED MATL

PLATING IN COMP. ALSO LAB IN HOUSE

BATCH SYSTEM

CHROME REDUCED FROM HEX → TRI

ENTERS FLOW THRU.



NITRIC ACID
HYDROCHLORIC ACID USED AS A CLEANING AGENT ON CRYSTALS

AQUA REGIA → DISSOLVES METAL CANNISTER IN A BEAKER

~~WASTE~~ CONCENTRATED MATL PLACED IN 10-15-GALLON PLASTIC CONTA
TRANSFER TO BATCH TREATMENT AND PLACE IN SYSTEM

WASTE N-METHYL PYRROLE AS A CLEANER FOR CRYSTALS

ALL ACIDS ARE MANAGED IN THE HWTU EXCEPT
THOSE WHICH ARE LAB PACKED

STAMCO SYSTEM HAS A PLATING LINE (COPPER)

WASTE FLUX & THINNER MIXTURE

↳ ISOPROPYL ALCOHOL

MAINTENANCE ——— plastic "waste" oil

BLDG MAIN & PRODUCTION MAIN.

MOST DATA FROM BLDG MAIN.

WASTE OIL FROM FORKLIFTS (MACHINE OILS FROM PROD. MAIN)

FREON-BASED OILS MAINTENANCE OF COMPRESSORS

↳ REUSED

FREON GENERATED: USED AS A DEGREASING

CAPTURED IN COOLING COILS

SELF-CONTAINED FREON CLEANER

NON REUSABLES SENT TO SAFETY-KLEEN

ELGIN WILL BE USED AS A TRANS. FOR FLUID RECOVERY

LAQUER THINNER IN SAFETY-KLEEN

POST WASTE PAINT / PAINT THINNER

NOW USE LATEX BASED PAINTS

55-gallons SAT ⇒ DSA

PCB FROM FLOURESCENT LIGHT BALIST

ROLLINS ~~[illegible]~~ JX FOR INCIN. OWN TRANS

CLOSURE SOI, SOZ BOTH COMPLETE

OIL HOUSE – VAPOR CONTROL
– SOIL – WILL DO VAPOR EXTRACTION
↳ ASAP

CHROMATE LEAKING FROM [redacted] 1/90
MECHANICAL ROOM BUILT BELOW GROUND
CHROMATE USED TO PACIFATE THE COOLING TOWER
ENTERED THE STORM SEWER ⇒ RETENTION POND RECLAIMED
SOIL SAMPLING IN RETENTION POND
NO SOIL REMOVED
WILL GIVE COPY OF REPORT

UST REMOVED FUEL OIL LEAK
2,000 G. TANK ~500 GALLONS IN TANK
PROBLEM DISCOVERED WHEN DAY TANK SIGHT GLASS
SHOWED WATER IN TANK
DETERMINED THAT TANK WAS LEAKING
SOIL REMOVED AND DISPOSED
STANDING WATER
WILL GIVE REPORT

← FIRE IN RESEARCH FACILITY
RESULTED IN 10-gallon RELEASE OF SODIUM CYANIDE TO FLOOR OR
MISHANDLING OF CHEMICALS
FLOOR LED TO EAST SIDE TO OUTFALL TO SEWER MAIN.
DRAIN WAS PLUGGED BY DEBRIS PUMPED OUT BY MOTOROLA
WATER WAS TREATED THRU WWTV.
- SINCE ALL FLOOR DRAINS AT MOTOROLA ARE PLUGGED
PLUGGED 4/89 ENDED 12/89

* PERMIT

MSD -

MWRGSD - INDUSTRIAL DISCHARGE PERMIT

ALL PLANT WATER

NON-CONTACT COOLING BOILERS, CHILLERS, ECT.

TREATED WW

FLAMMABLE SOLVENTS IN ONE STORAGE AREA

CHEMICALS IN ADJACENT RM

NONHAZ WASTE (SALT) ⇒ 26 55-g

PCB ⇒ 27 55-g

FSA NEW ACID & CHEMICAL STORAGE (PARTIAL)

NEW EPOXY SURFACE

EXISTING OPEN UP BERM WAS PATCHED BUT NOW SEALED-EPOXY

ADJACENT ROOM A2 CORROSIVE STORAGE

WILL BUILD CANOPY OVER OUTSIDE CONCRETE DRIVE

CONCRETE WILL BE EPOXY SEALED

ACCUM

WASTE FLAM

TCA

WASTE OIL

WASTE FLUX THINNER

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11 ||| WASTE FLAM

1 WASTE OIL (SENT TO SK.)

1 ||| KEROSENE

1 WASTE METHYLENE CHLORIDE

1 WASTE FREON OIL

|||| ||| TCA

1 LIQUID RUBBER POLYMER

1 WASTE CIRCUIT BOARDS (DMS)

11 BIOACT D001 (SOLVENT USED)

||| SOLVENT RAGS (INCINERATION)

1 LATEX PAINT WASTE

||| ||| LAB PACK

~~[illegible]~~

11 PARAFIN WAX

11 ASBESTOS BAG

PAINT BRUSHES

PLATING FILTERS

||| ||| LAB PACK 35

1 ASBESTOS 55-g.

1200 { DDOS 1250 lbs. INLETS

POT DUMP

11

|||| LEAD ACID BAT.

1 CHROMITE 35-g.

||| ||| LAB PACK 5-g.

1 2.5 WASTE OIL

1 5 g FLAM

$ MED WASTE 10/LS

REMEDIATING UNIT HAS SECONDARY
250 g NOW USE 55 g.

~~RE TREATED~~ PAINT ACCUM AREA (LAAA)
CHAR. AS HAZ.

PCB ROLLINS

6 GAL METAL CANS IN SOLDERING AREA – CLEAN ROOM
↓
SHARED SYSTEMS

ADVANCED REFLOW FACTORY

NITROGEN GAS WASTE FROM OVENS (CONVECTION) IN SILPIN ROOM
FOLINIC ACID FUMES VENTED
IPA
TRIPINIOL

REFLOW = HEAT AS OPPOSED TO WAVE

CRYSTAL BLANK MANUF (CBM)
CRYSTAL CUTTING

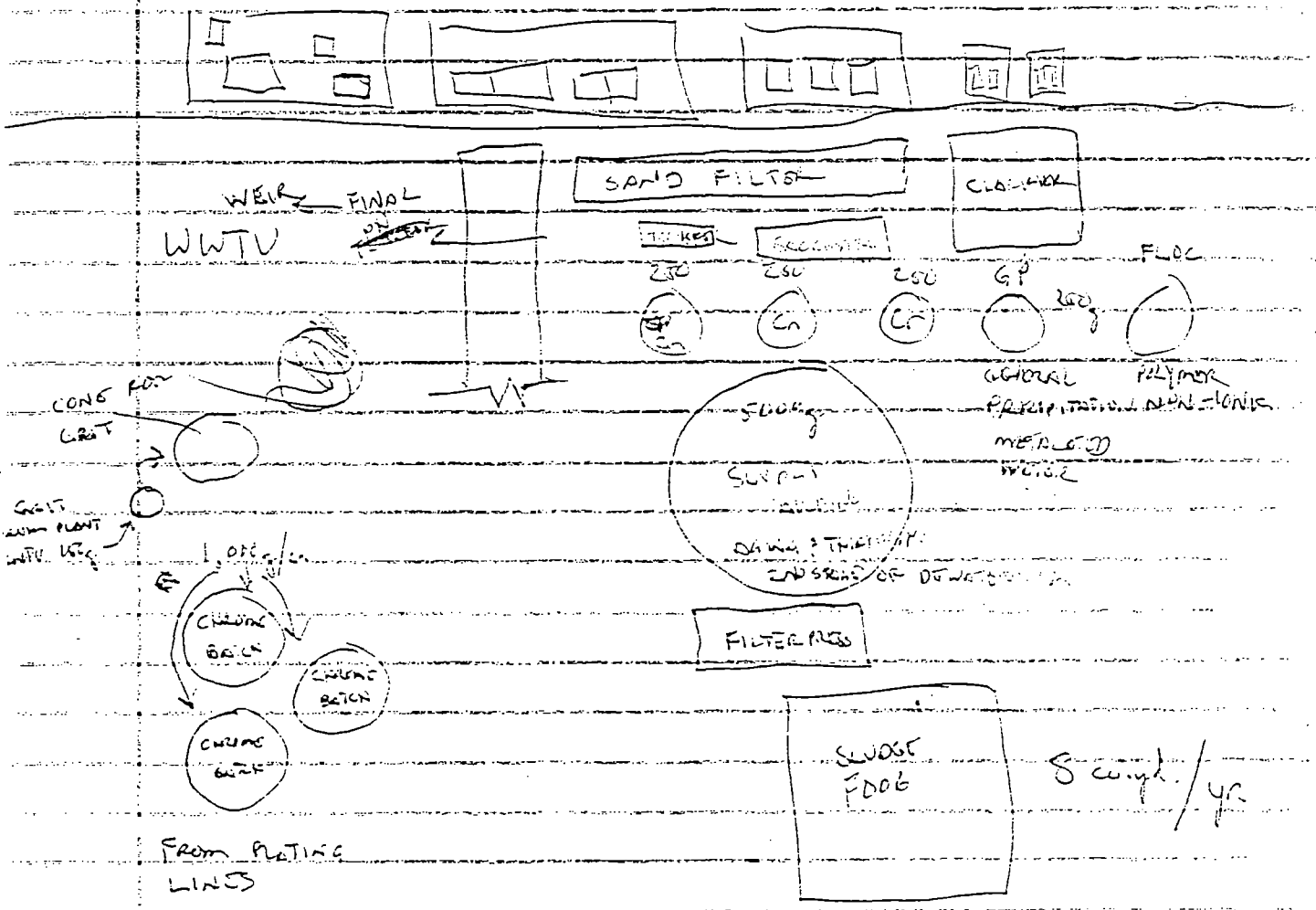
SLURRY COLLECTED IN TROPH LOADS TO CONE
IN WWTU

CONE CLEAN MOSTLY SODIUM HYDROXIDE
TREATED ON SITE

RINSE STATION GOES TO WW TREATMENT UNIT

METHANOL SAA
2 5 g

PHOTOVOLTAIC PLATING LINE WILL SEND PFD



WEIR IS pH MONITORED

WATERED TO SANITARY

discuss (operation
1st 2-2 AOC, Sum[illegible]
not

USTs

Margin note	Tank	Size	Note
DETECTION ALARMS IN HWSV AREA	1 GASOLINE	1,000 g	DBL WALL CONSTRUCTION FIBERGLASS
	1 DIESEL	1,000 g	
DETECTION ALARMS IN MIS BLDG & VISITORS CENTER	1 DIESEL	2,000 g	
	1 DIESEL	2,000 g	

how old — install
intg. testing —
When testing —

MTG :

OVER 100 TON LIMIT EXCEEDED IN 1991
FED IMPLEMENTATION PLAN [illegible] SUBMITTED TO USEPA
RESUBMITTED CURRENT EMISSIONS AT 96 TONS